

Eastgate/I-90

Land Use & Transportation Project

Citizen Advisory Committee

April 7, 2011



- 1. Transportation planning 101.**
- 2. Review the transportation issues and constraints in the corridor.**
- 3. Identify where and how we might address the needs of motorists, transit riders, bicyclists, and pedestrians.**

April 7 Meeting - Discussing a range of transportation strategies that we will advance through our alternatives development and analysis phase.



	Nov-Dec 2010	Jan-Feb 2011	Mar-Apr 2011	May-Jun 2011	Jul-Aug 2011	Sep-Oct 2011	Nov-Dec 2011	2012	
CAC	Background & Context	Issues & Opportunities Land Use, Transportation, Urban Design, Environment		Identification and Analysis of Alternatives		Development of Preferred Alternative	Final Report	Comprehensive Plan and Development Code Amendments	
Outreach	<div><div>●</div>Community Briefings<div>●</div></div> <div>Open Houses</div>								
Reporting	Regular Briefings to Transportation Commission & Planning Commission Regular Briefings to City Council								



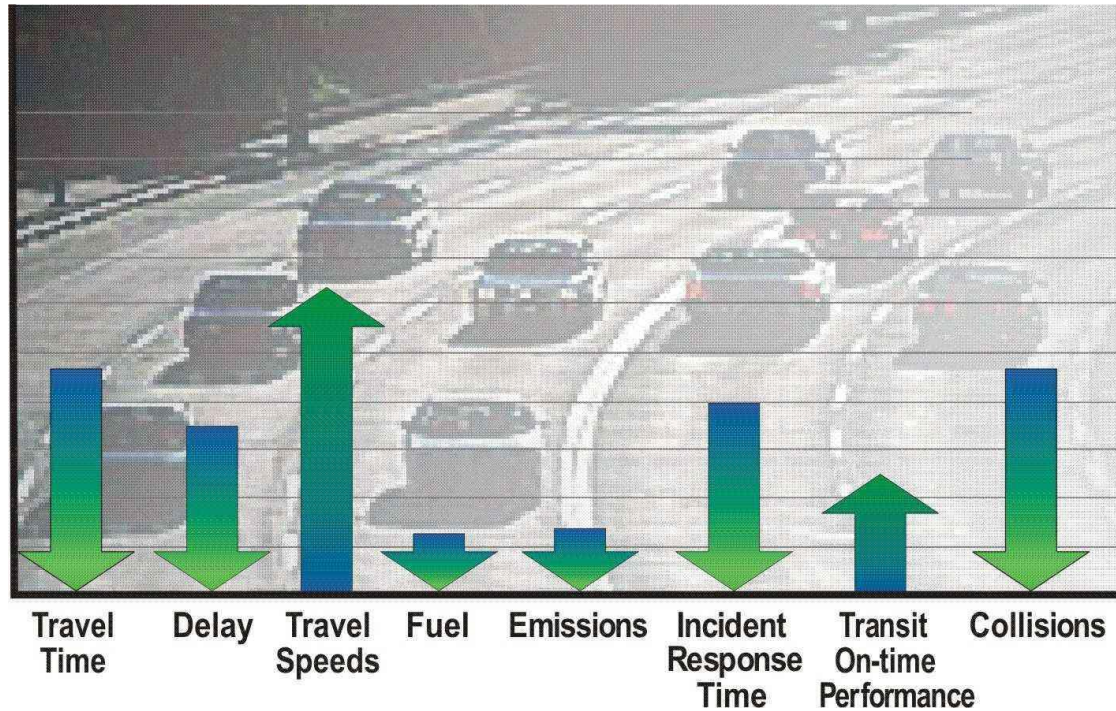


Transportation Planning 101



Eastgate/I-90
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At the end of this process the CAC will arrive at a set of transportation strategies that implement the land use vision, improve mobility, and consider:



Bellevue's approach to improving traffic flow and mobility.



Adding capacity strategically

Adding new capacity to the transportation system removes choke points, and improves reliability and throughput.



Operating roadways efficiently

More efficient traffic signals, information, and transit priority are effective countermeasures in areas where demand exceeds capacity.



Managing demand & providing choices

Providing more travel choices and options for people improves the efficiency and effectiveness of the system.



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Transportation Strategies

LOS Categories	Average Volume-to-Capacity Ratios	Description (Subjective Impression of User)
LOS A	Less than or equal to 0.600	Highest drive comfort. Little delay. Free flow.
LOS B	0.601 - 0.70	High degree of drive comfort. Little delay.
LOS C	0.701 - 0.80	Some delays. Acceptable level of driver comfort. Efficient traffic operation.
LOS D+ (High D)	0.801 - 0.85	Some driver frustration. Efficient traffic operation.
LOS D- (Low D)	0.851 – 0.90	Increased driver frustration. Long cycle length.
LOS E+ (High E)	0.901 - 0.95	Near capacity. Notable delays. Low driver comfort. Difficulty of signal progression.
LOS E- (Low E)	0.951 - 1.000	At capacity. High level of congestion. High level of driver frustration.
LOS F	Greater than or equal to 1.001	Breakdown flow. Excessive delays.

This table is in the Transportation Element (Table TR-2) of the Bellevue Comprehensive Plan and represents the City’s adopted Traffic Standards Code (Chapter 14.10) for satisfying mobility and level of service.

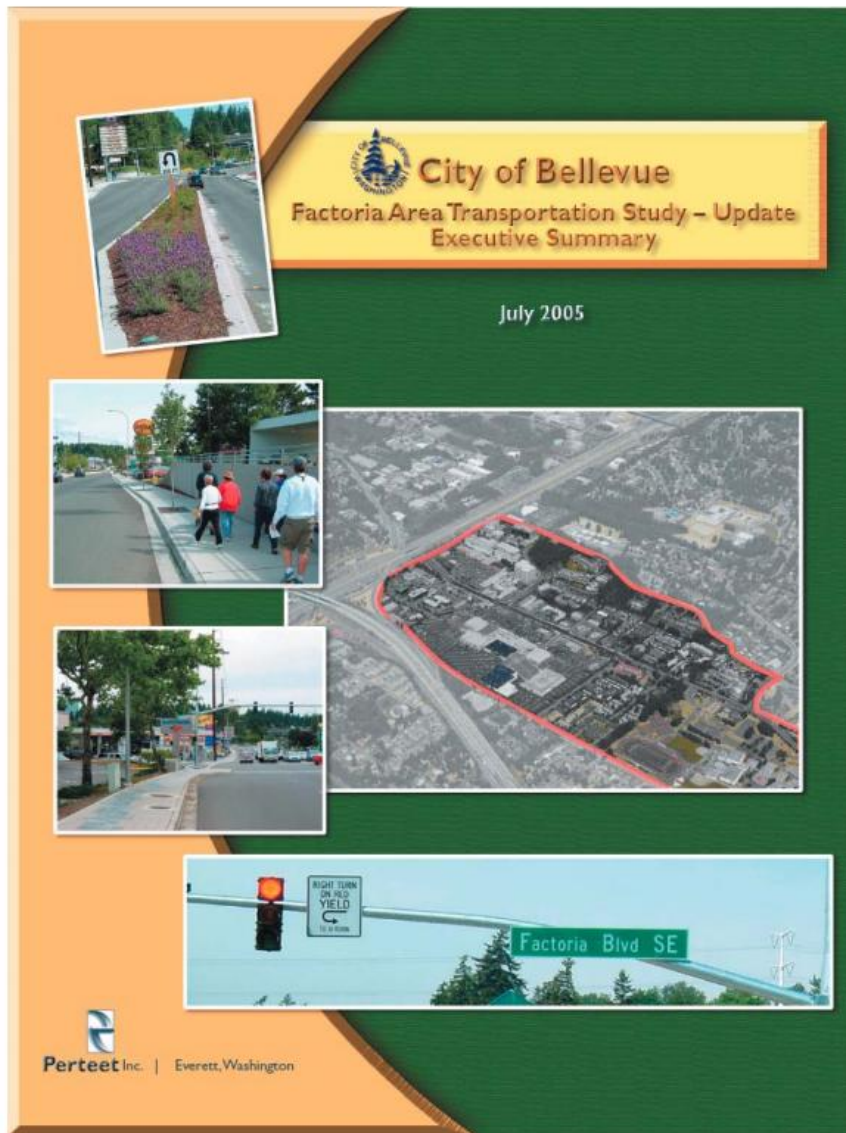


“Don't increase density without increasing road capacities.”



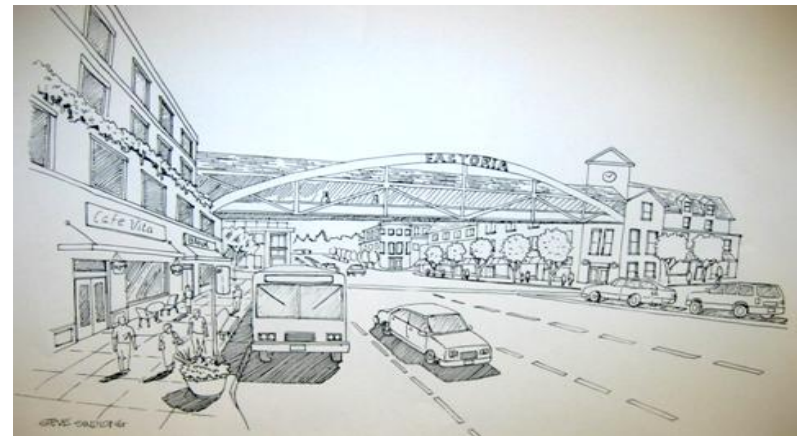
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Public Opinion

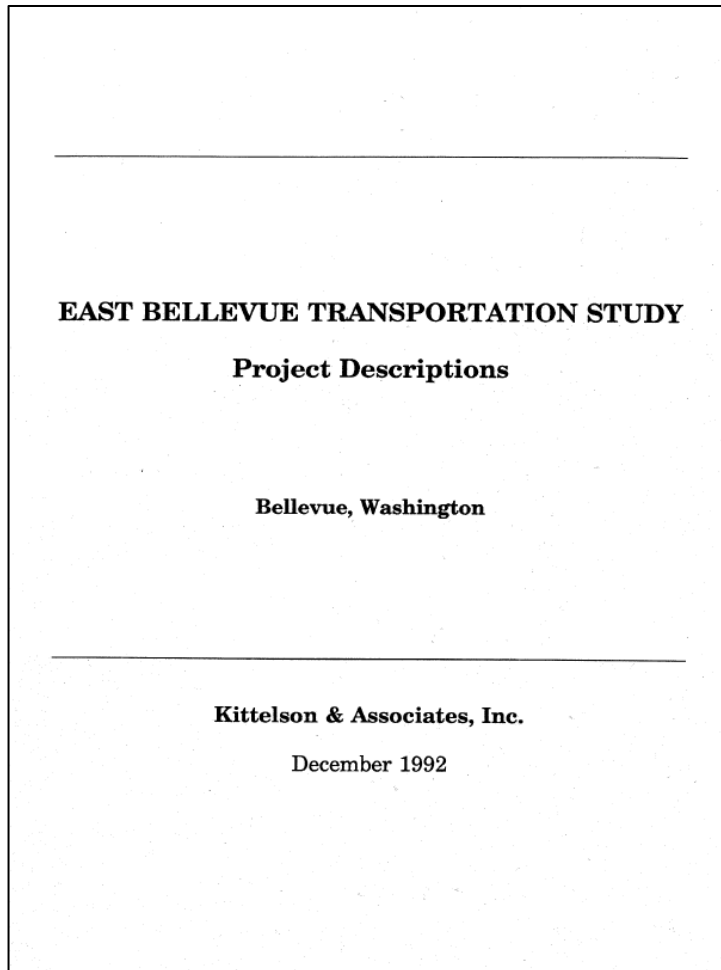


“Benefits of Transit Intensive Service in 2030: Traffic modeling efforts that examined **a long term transit intensive scenario** found that new transit facilities, such as a Factoria Transit Center at Factoria Boulevard and SE 38th St; bus rapid transit freeway stations on I-90 and I-405, and additional pedestrian connections **could resolve most of the intersection congestion problems without additional roadway construction.”**

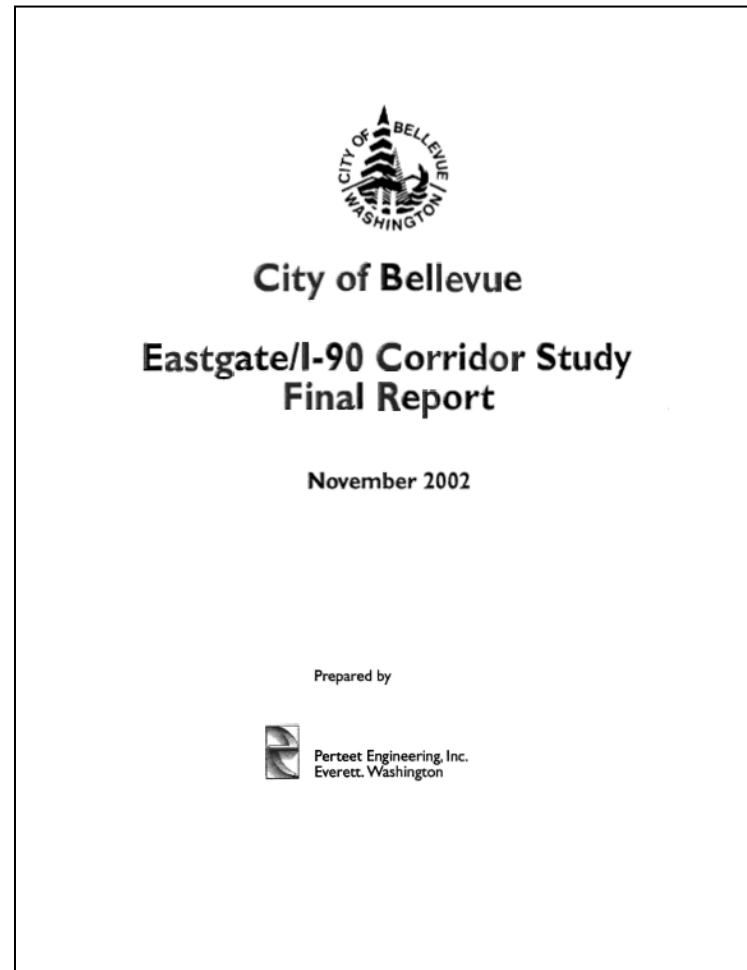
- Factoria Area Transportation Study (2005)



Factoria Transit Center Concept



1992 EBTS



2002 Transportation Study

Final Report

Eastgate Preliminary Screening Analysis

Project # 20090069

December 2009

Prepared for:



City of Bellevue
450 110th Ave. NE
P.O. Box 90012
Bellevue, WA 98009

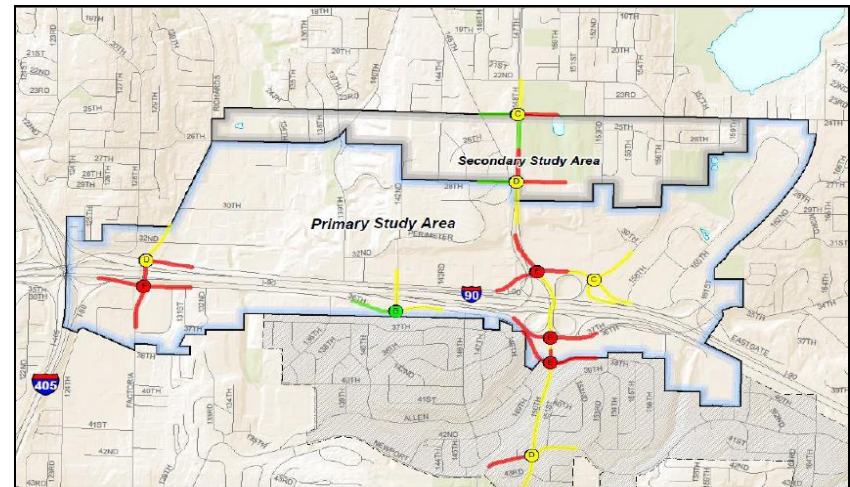
Prepared by:



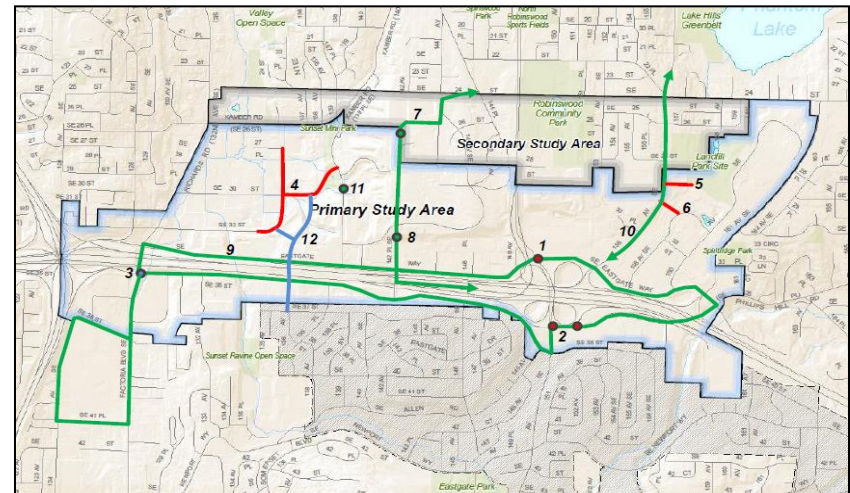
Pertee Inc.

505 Fifth Avenue S, Suite 210
Seattle, WA 98104

2030 Original (Base) Land Use Alternative - PM Peak LOS (Synchro Model)

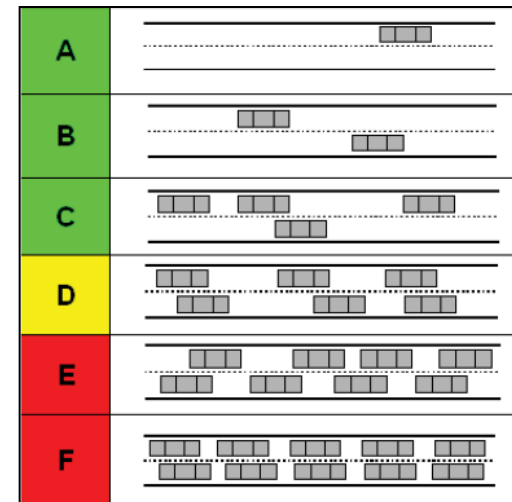
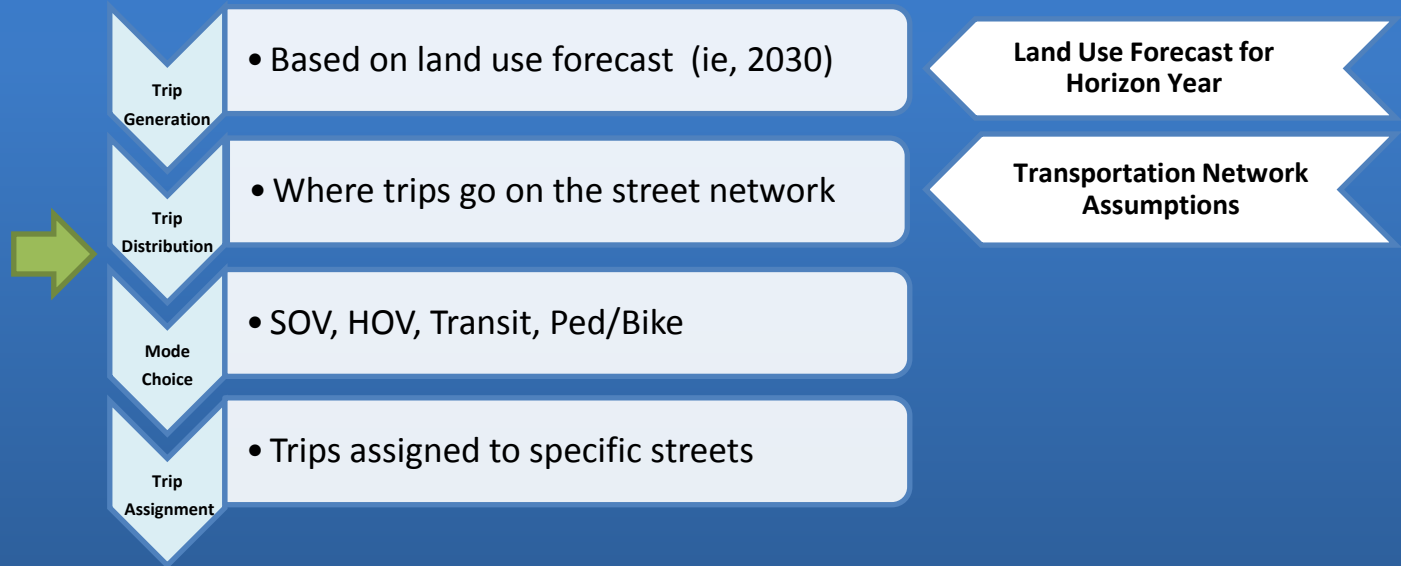
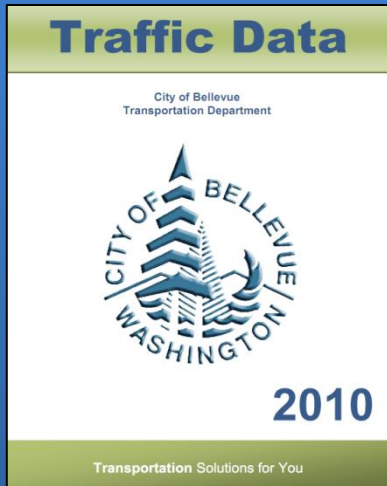


Preliminary Recommended Projects



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2009 Preliminary Screening



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Travel Demand Modeling

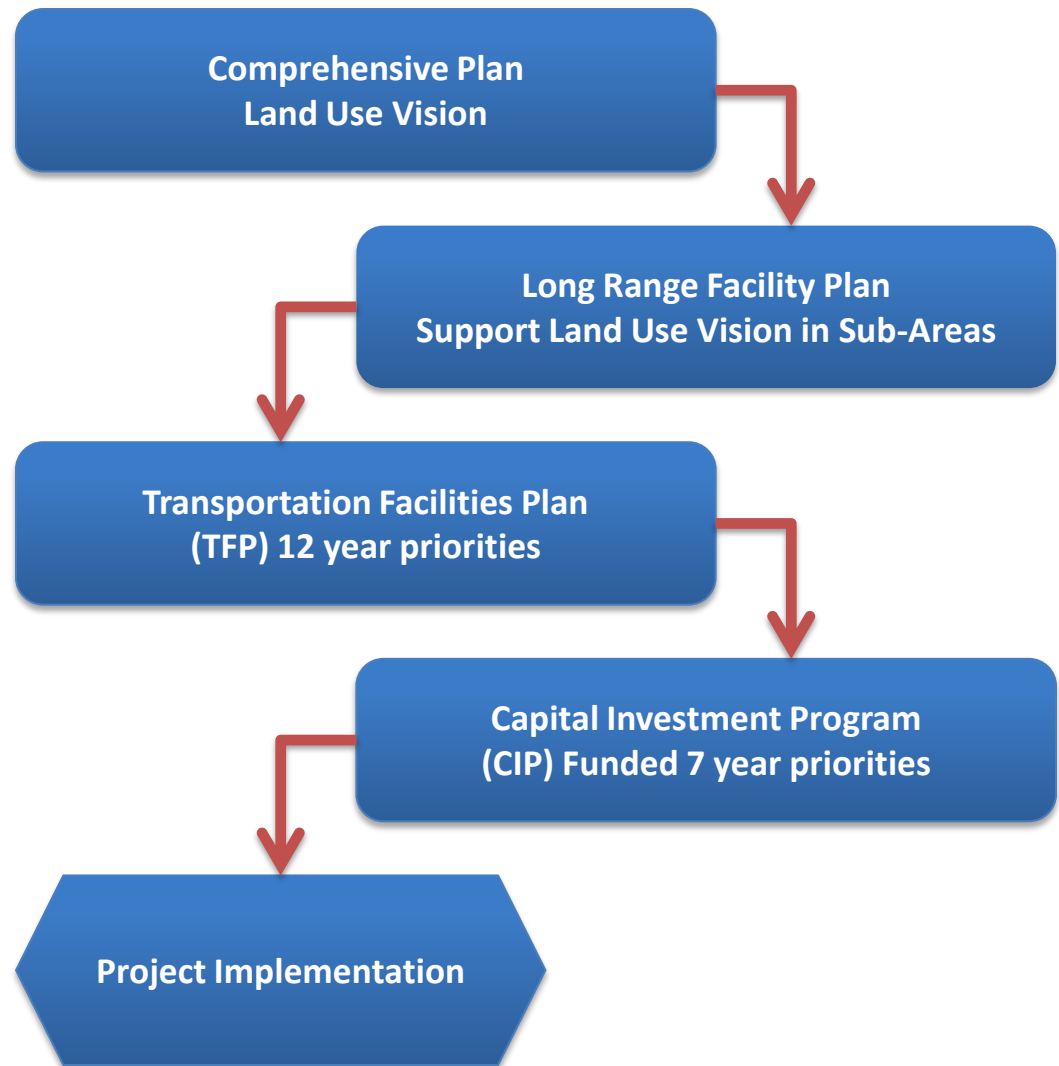
DRAFT - LOS & Delay for 2008 & 2030 Land Use Alternatives

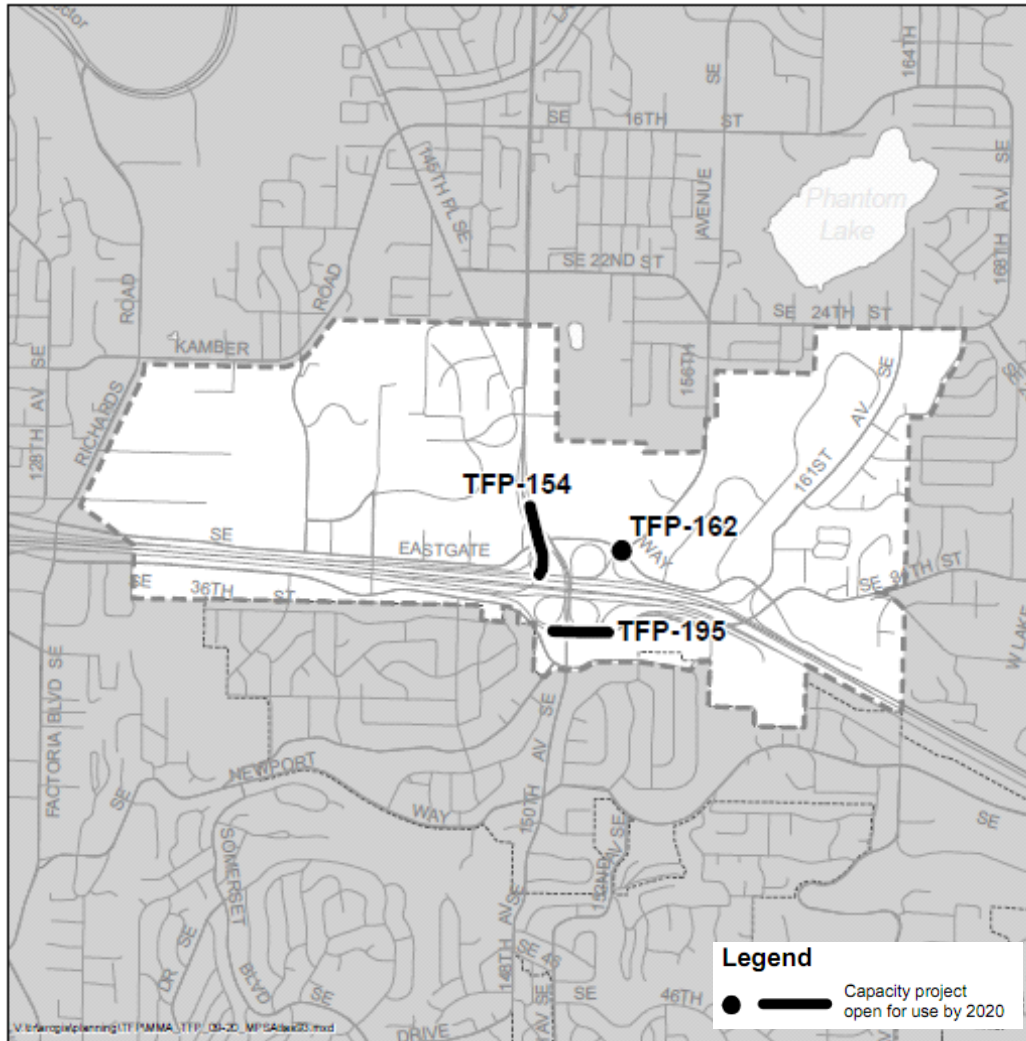
Intersection	2008 AM		2030 AM Orig LU		2030 AM Mod LU		2008 PM		2030 PM Orig LU		2030 PM Mod LU	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
#55 - 148th Ave SE @ SE 24th Street	A	8.6	B	10.3	B	10.4	B	15.0	C	31.0	D	52.5
#57 - 148th Ave SE @ SE 28th Street	C	22.4	D	46.0	D	45.5	D	36.5	D	51.6	E	58.1
#86 - 156th Ave SE @ SE Eastgate Way	C	23.6	C	25.6	D	38.8	D	41.7	C	28.5	C	34.3
#101 - 150th Ave SE @ SE Eastgate Way	D	42.4	E	58.5	F	95.3	E	58.2	E	57.0	F	98.2
# 105 - Richards Road @ Eastgate Way	D	42.0	D	39.3	D	46.5	C	28.4	D	48.4	D	53.3
#133 - 150th Avenue SE @ SE Newport Way	C	20.4	C	23.3	C	25.0	C	28.2	D	41.2	D	46.7
#171 - 142nd Avenue SE @ SE 36th Street	A	9.7	C	2.8	C	26.9	B	17.4	B	19.2	C	25.3
#174 - 150th Avenue SE @ SE 38th Street	C	21.1	C	24.8	C	26.6	D	37.3	E	71.6	F	118.3
#204 - Factoria Blvd @ SE 36th Street	D	53.5	F	83.1	F	101.5	E	69.9	F	115.7	F	120.5
#227 - 150th Avenue SE @ I-90 Off-Ramp	D	49.3	E	74.9	E	79.9	E	69.2	E	65.7	F	93.0

1. 2030 Base Alternative – The following additional amounts above the 2008 (Existing): 1 million feet office space; 66,000 feet institutional use; 109 multi-family dwelling units; and, 320 hotel rooms.
2. 2030 Modified Alternative – The following additional amounts above the 2030 Base Alternative: 1.8 million feet office space; 280,000 feet institutional use; 1,000 multi-family dwelling units; and, 400 hotel rooms.



- **Comprehensive Plan** outlines the City's long-term (over 20 years) land use vision.
- **Long range facility plans** include a wide range of improvement projects designed to meet the mobility goals of the subarea.
- **Transportation Facilities Plan (TFP)** City's transportation implementation plan, constrained by identified City and other revenues that are projected for the next 12 years.
- **Capital Investment Program (CIP)** provides a minimum six-year period (the City adopts a seven-year CIP every two years) for implementation of TFP projects that are likely to be needed in the short term.





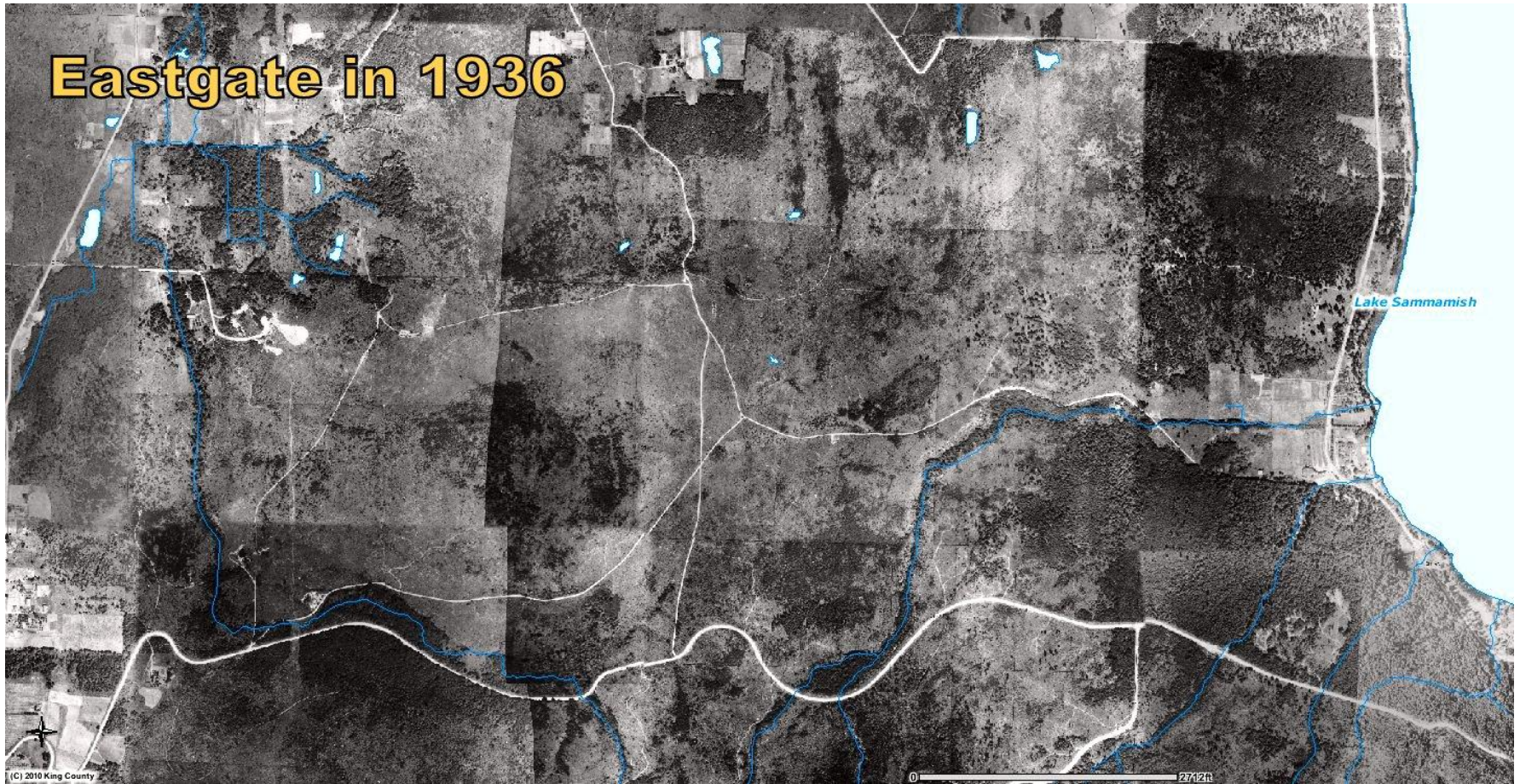
TFP#	Project Name, Location and Limits	Project Description
TFP-154	148th/150th Avenue SE/I-90 westbound on-ramp to I-90 westbound off-ramp	Widen by extending the third southbound lane on 148th Avenue SE from the on-ramp to I-90 to westbound I-90 to south of Eastgate Way at the I-90 westbound off ramp.
TFP-162	156th Avenue SE at SE Eastgate Way (I-90 westbound off-ramp)	Widen the I-90 westbound off-ramp to provide two dedicated left turn lanes and a shared through/right lane with a channelized right turn.
TFP-195	150th Avenue SE/SE 37th Street/I-90 off-ramp widening	Widen I-90 off-ramp 300' west of 150th Avenue SE and add a through lane. Widen SE 37th Street approximately 500' to the east of 150th Avenue SE to allow for a bypass lane on the right side of the street.





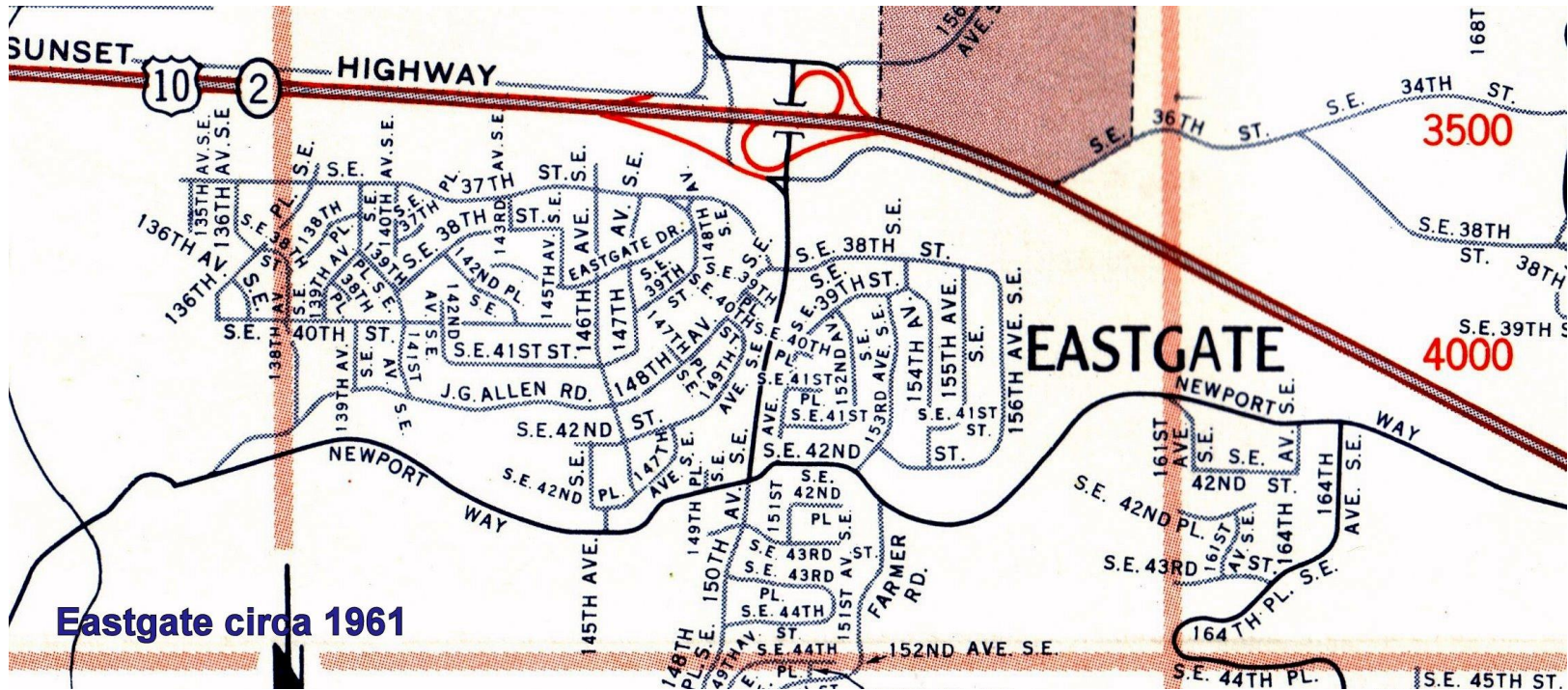
I-90 Constraints & Opportunities

Eastgate in 1936



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1930s



Once called the Sunset Highway and US Route 10, I-90 became part of America's Interstate system in the early 1970s.





Image from Flickr user KDavidClark



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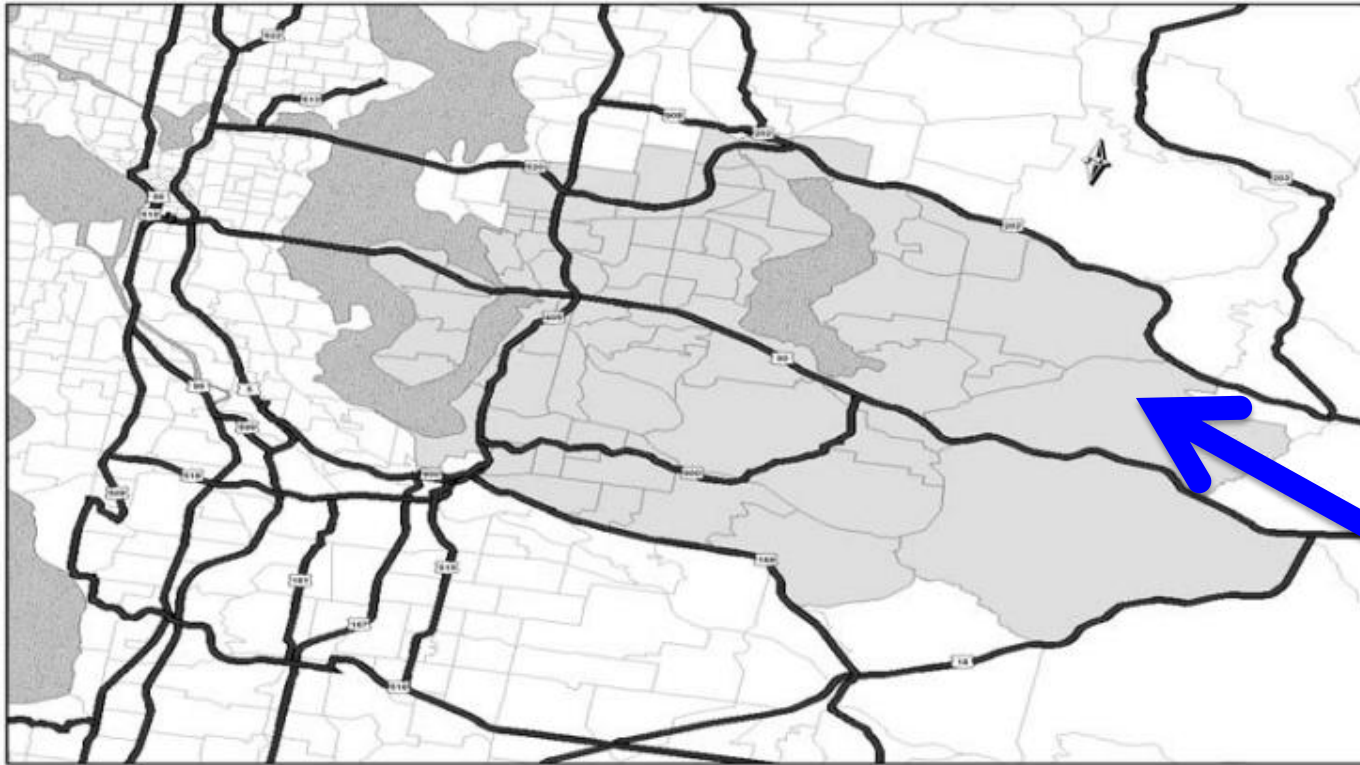
Today

What Do You Like?



What's Not So Good?





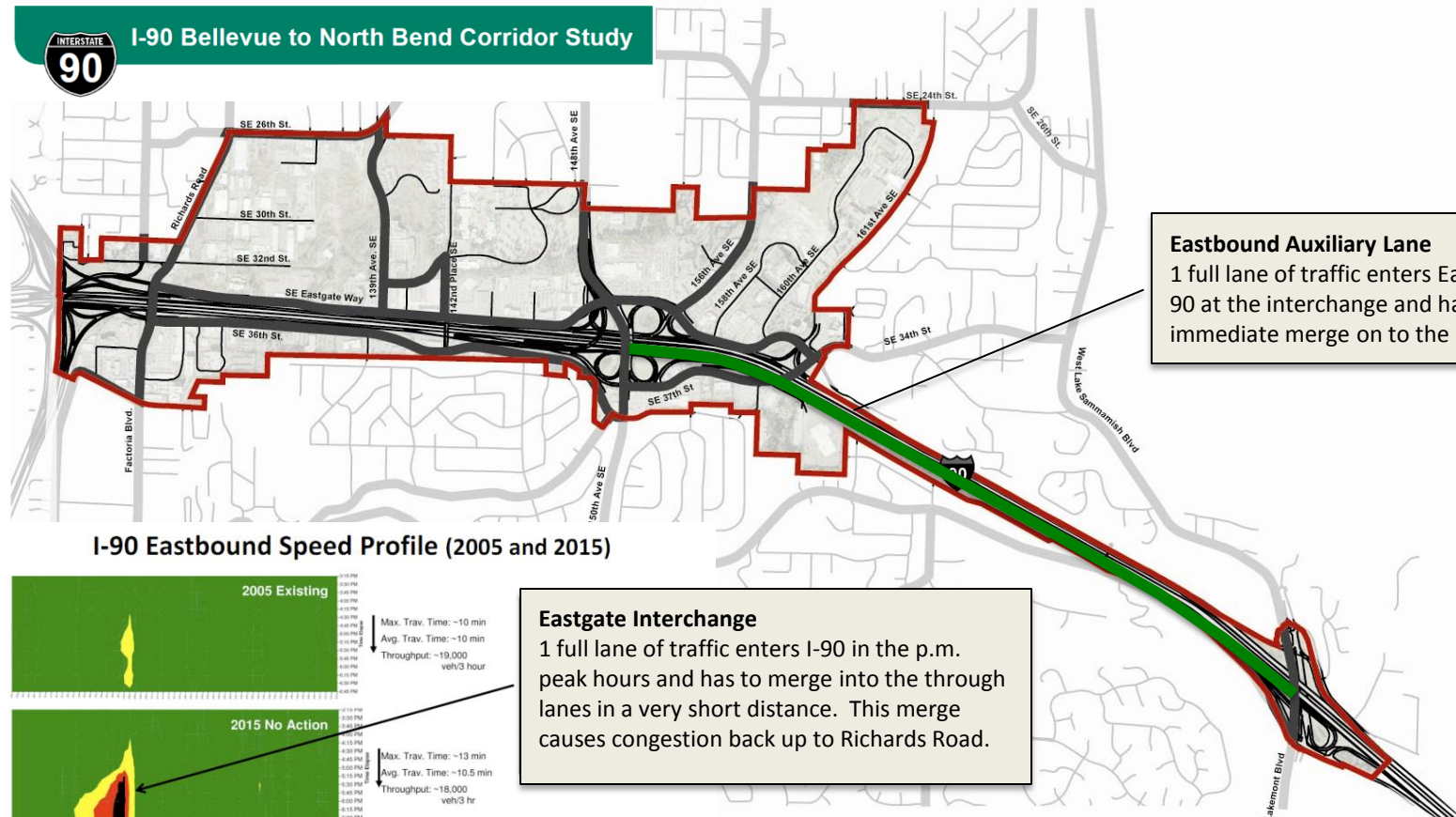
Shaded area represents 85% of the traffic that will cross the I-90 floating bridge in the morning.

Today, this travel-shed has an estimated 118,000 households or a population of roughly **295,000 people** and a **job base of 250,000**. This population is projected to grow to 156,000 households (**375,000 people**) and the **job base to 390,000** by the year 2030.

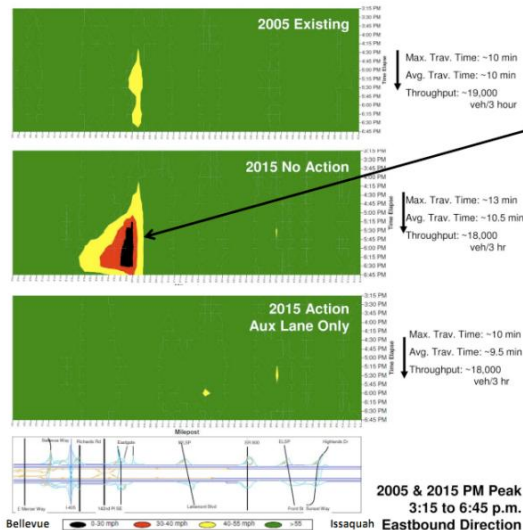




I-90 Bellevue to North Bend Corridor Study



I-90 Eastbound Speed Profile (2005 and 2015)



Eastgate Interchange

1 full lane of traffic enters I-90 in the p.m. peak hours and has to merge into the through lanes in a very short distance. This merge causes congestion back up to Richards Road.

By providing an eastbound Auxiliary Lane, vehicles will have more space to enter the mainline traffic resulting a smoother merge and less congestion at this point.

Note: Not in current Bellevue 2030 travel demand model.



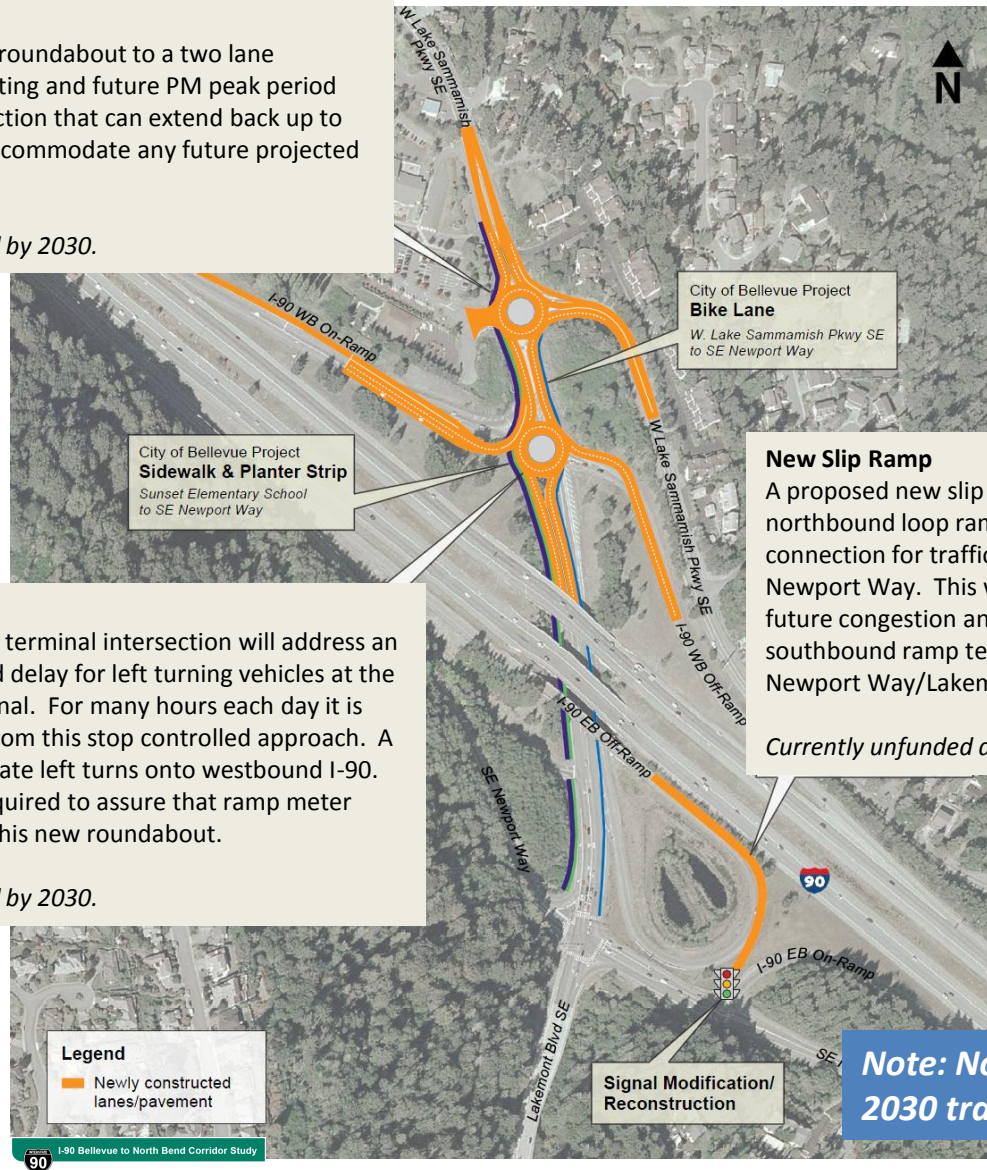
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WSDOT I-90 Project

Existing Roundabout

Expand the existing single lane roundabout to a two lane roundabout to address the existing and future PM peak period queues in the southbound direction that can extend back up to Vasa Park. In addition, it will accommodate any future projected traffic growth in the area.

Currently unfunded and needed by 2030.



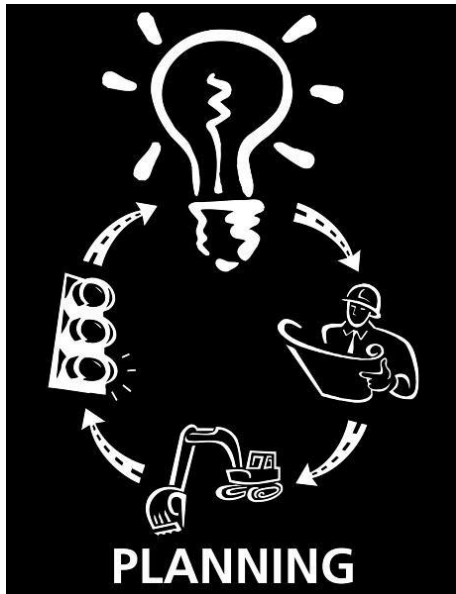
New Roundabout

A new roundabout at this ramp terminal intersection will address an existing and future queuing and delay for left turning vehicles at the I-90 westbound off-ramp terminal. For many hours each day it is difficult to make this left turn from this stop controlled approach. A new roundabout will also facilitate left turns onto westbound I-90. Additional ramp widening is required to assure that ramp meter queues do not extend back to this new roundabout.

Currently unfunded and needed by 2030.



*“Work to improve the performance of state facilities in the area – I-90 and its access points—which today create major issues for the City’s land use and arterial system.”
– Bellevue Council Principle*



2030 No Action

Assumes the completion of the three improvements referenced in Bellevue Transportation Facility Plan (programmed/unfunded).

2030 Build Alternative

Could also include improvements from Eastgate/I-90 projects including WSDOT’s I-90 Corridor Project List, as well as other improvements.

“The most needed improvement to urban design is directional signage to help drivers exiting or accessing freeways, to locate businesses, to connect between centers and to adjacent areas.”



- WSDOT will replace 13 freeway exit signs on westbound I-90 in the Eastgate area of Bellevue to improve sign clarity, helping unfamiliar drivers reach their destination more easily.

- Providing more understandable and readable signs improves safety by reducing last minute or unnecessary lane changes caused by driver confusion.

- WSDOT maintenance crews should be finished by July.

- Total project cost: \$80,000

I-90 WB milepost 13.01 (Structure ID: S801927)
De-energize and remove sign lighters. Remove existing 15' x 12' sign and replace with new 17' x 11' sign.



I-90 WB milepost 12.57
Remove existing 19' x 10' sign and replace with new 17' x 7' sign. (use existing posts).



I-90 WB milepost 12.34 (Structure ID: S801950)
De-energize lighters for installation but do not remove. Remove existing 15' x 14' sign and replace with new 17' x 11' sign.



I-90 WB CD 01241 milepost .36
Remove existing 13' x 8' sign and replace with new 17' x 7' sign on new steel posts/dip base foundation (per standard plan G-24.60-00)



I-90 WB milepost 11.54 (Structure ID: S801942)
De-energize and remove sign lighting. Remove existing 12' x 12' sign and replace with new 15' x 10' sign.



I-90 WB milepost 10.51
Install new 13'x8' guide sign and Hospital plaque on new posts, right shoulder behind guardrail (no slip base required).



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I-90 WB Eastgate Signs

Questions or Comments on WSDOT's I-90 Concepts?



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CAC Insights



Arterial Constraints & Opportunities

“Enhance the Eastgate corridor’s economic vitality without degrading mobility in other parts of the City, and ensure that it continues to contribute to the diversity of the City’s economic mix.” – Bellevue Council Principle

Solutions for Arterial Congestion

Increase Efficiency

- Signal Coordination
- Time-Based Changes (Reversible Lanes)
- Corridor-wide ITS

Increase Capacity

- Add Lanes
- Reconfigure



Solutions for Intersection Congestion

Reconfigure (At Location)

- Change Lane Configuration
- Grade Separate
- Roundabout

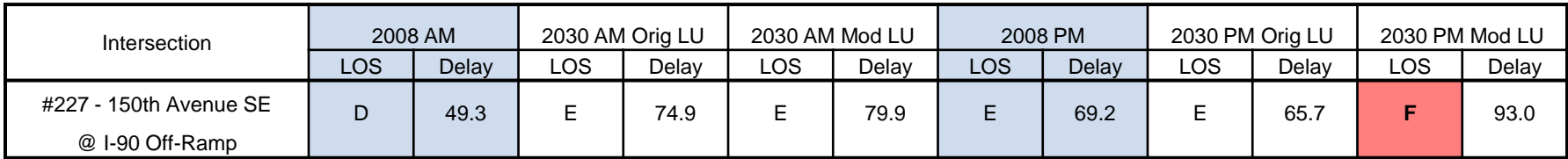
Change Operations (At Location)

- Reconfigure Signal
- Restrict Turns

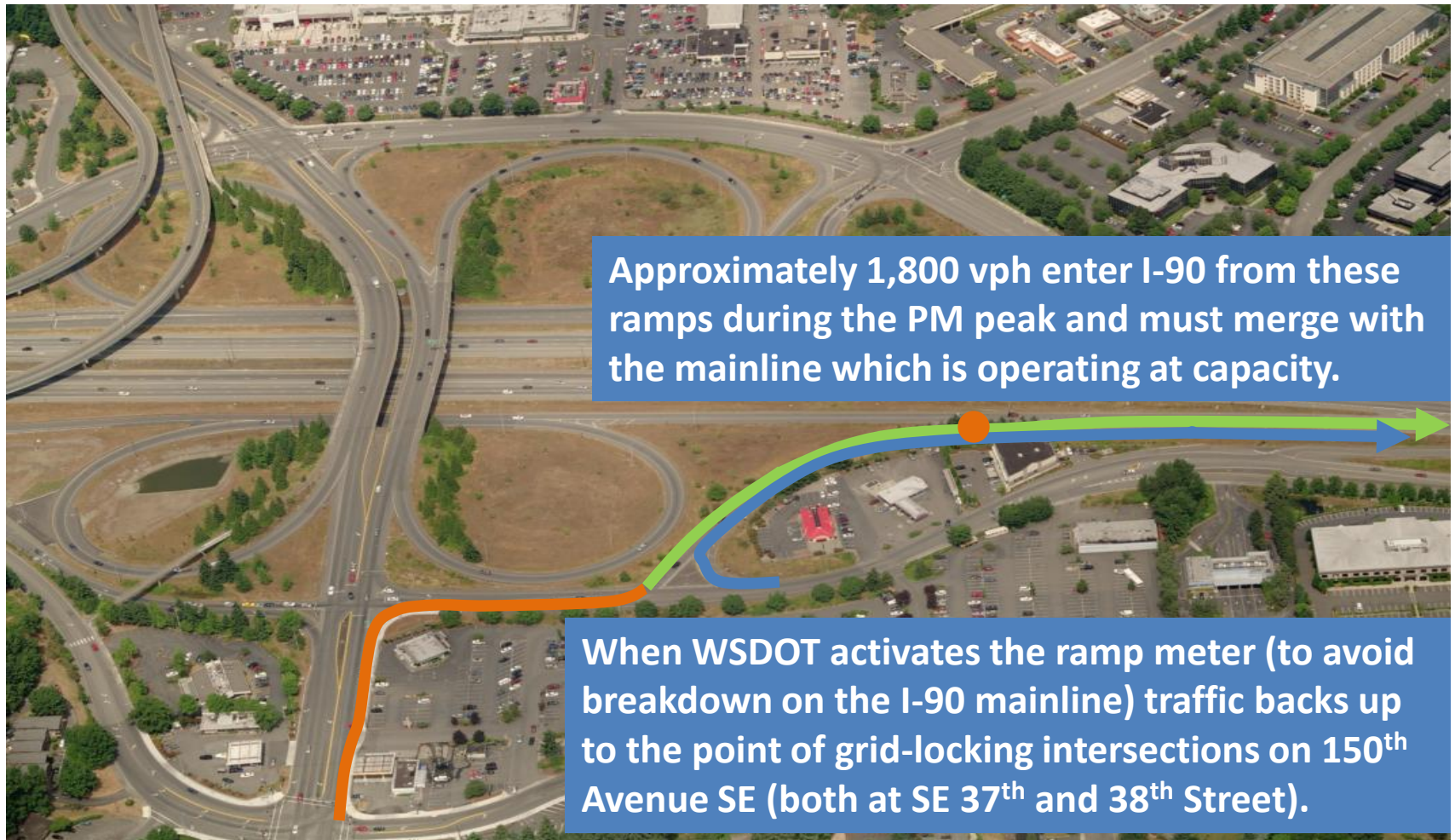




Illustrative Example #1



“People living south of I-90 have very limited options for accessing Eastgate or parts of Bellevue north of I-90. We all end up on 150th Ave and compete with cross traffic and people entering or exiting I-90.” – Public Opinion



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150 Ave SE Congestion

NB Vehicles on 150th Ave SE (SE 37th Street)



NB Vehicles on 150th Ave SE (SE 37th Street)



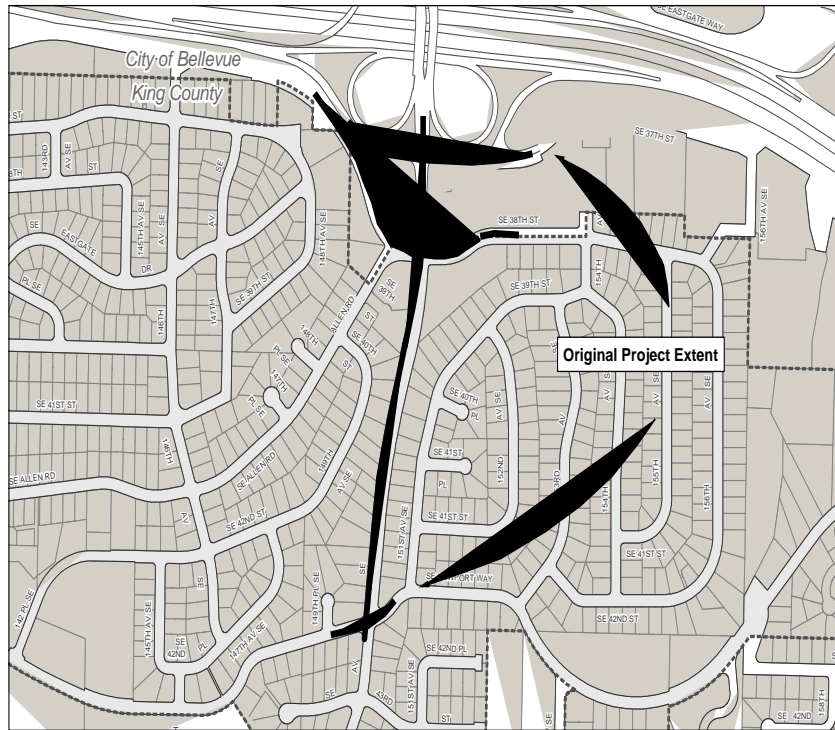
NB Vehicles on 150th Ave SE (SE 37th Street)



NB Vehicles on 150th Ave SE (SE 37th Street)



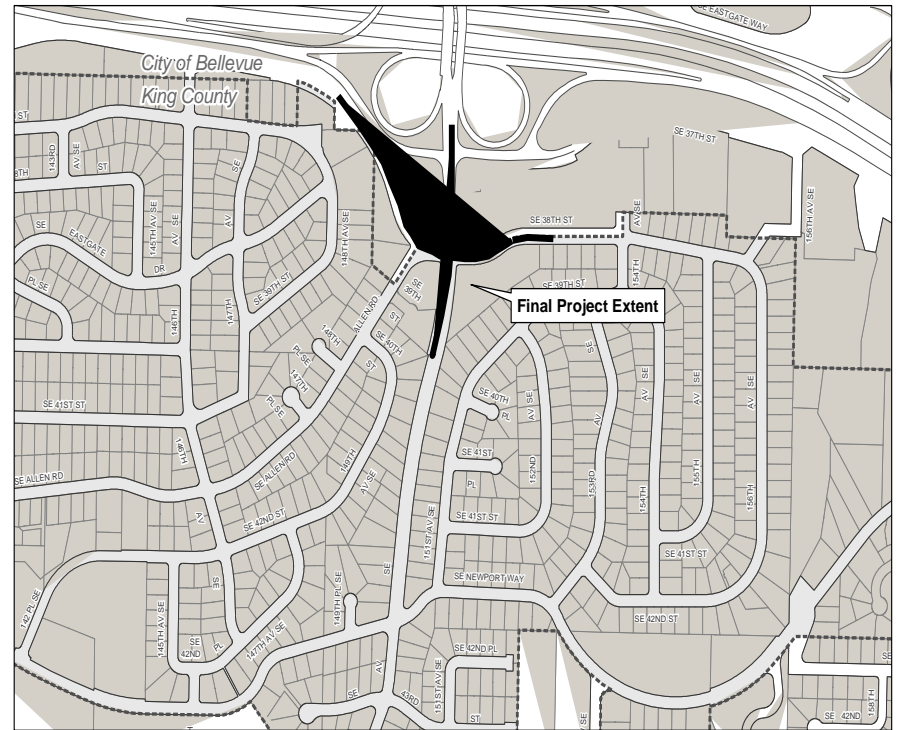
Project 2003



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CIP PW-R-105: 150th Avenue SE

Revised Project 2006



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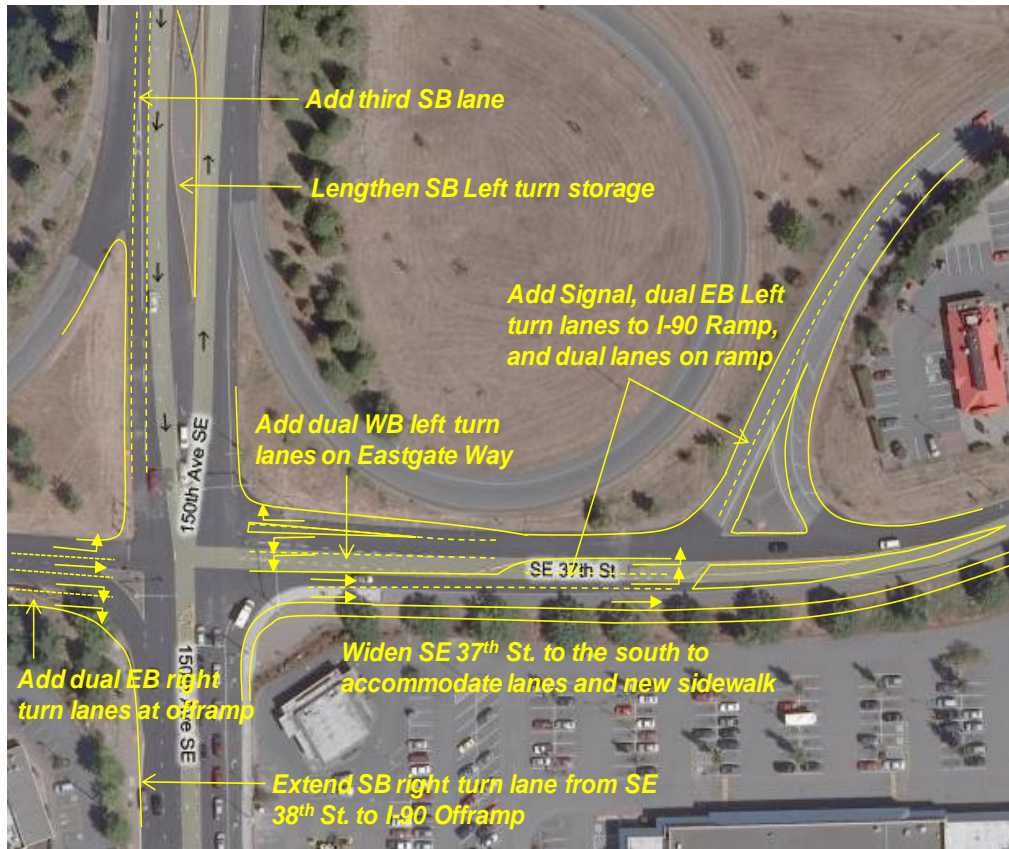
CIP PW-R-105: 150th Avenue SE



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TPF 195 (CIP 105 Remnant)

150 Ave SE & SE 37 Street



- **Concept:** Roadway widening (east, west and south legs of intersection), channelization improvements, new sidewalk on the south side of SE 37th Street, widening of the eastbound onramp to I-90 and new signal.

- **LOS improvements:**

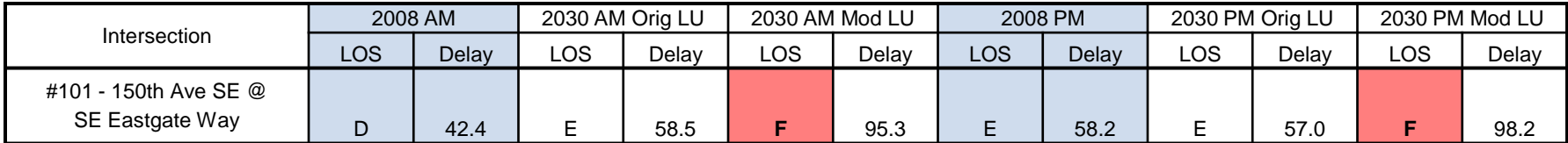
- 2030 AM Orig (E > C);
- 2030 AM Modified (E > C);
- 2030 PM Orig (E > C);
- 2030 PM Modified (F > C).

- **Cost Estimate:** \$4M

Note: Exclusive turning lanes for vehicles remove stopped vehicles from through traffic. A synthesis of research on this topic found a 25 percent increase in capacity, on average, for roadways that added a left-turn lane.



Illustrative Example #2





“This project includes provision of a third southbound lane along 148th Avenue SE from the ramp to westbound I-90 north of Eastgate Way south to the 150th Avenue SE overpass.

The ramp from eastbound I-90 immediately south of Eastgate Way would merge with the third southbound lane as the overpass of I-90 already has three lanes.

Drivers are projected to experience a 41% reduction in travel time along this corridor during the pm peak hour over the travel times projected for 2020 without this widening.”

- *Eastgate/I-90 Corridor Study (2002)*



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TFP – 154 (2002 Study)

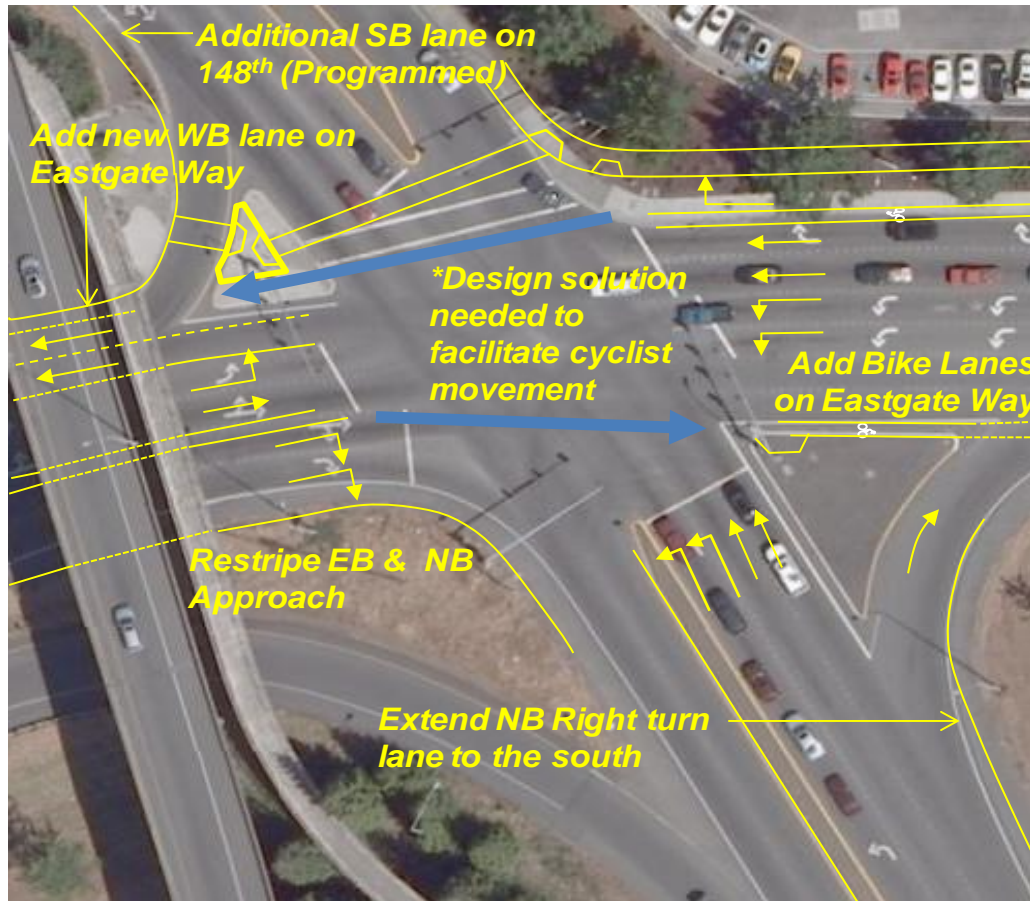


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Pedestrians & Cyclists

150 Ave SE & SE Eastgate Way



- **Concept:** Roadway widening, new sidewalk on the north side of the road, and bicycle improvements (including bike lanes and striping or painting through the intersection).

- **LOS improvements:**
2030 AM Orig (E > C);
2030 AM Modified (F > D);
2030 PM Orig (E > D);
2030 PM Modified (F > E).

- **Cost Estimate:** \$2.1M

Note: At intersections with substantial right-turn movements, a dedicated right-turn lane segregates these cars from through traffic and increases the capacity of the road.



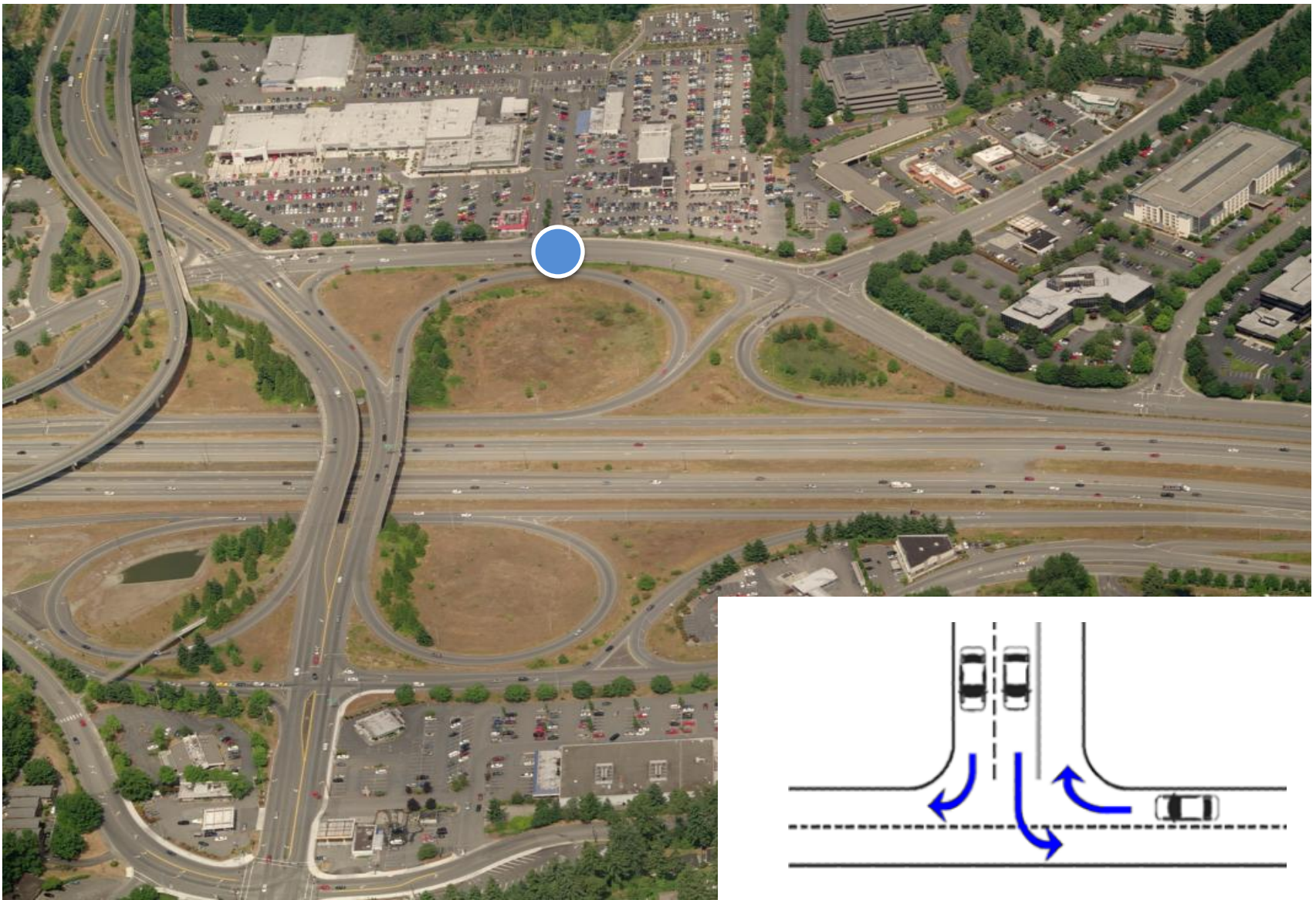


Illustrative Example #3



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Managing Access



Eastgate/I-90
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Sunset Village Driveway

SE Eastgate Way & Sunset Village Drive



SE Eastgate Way & Sunset Village Drive



Eastgate/I-90
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Elapsed Time: 00:20

SE Eastgate Way & Sunset Village Drive



SE Eastgate Way & Sunset Village Drive



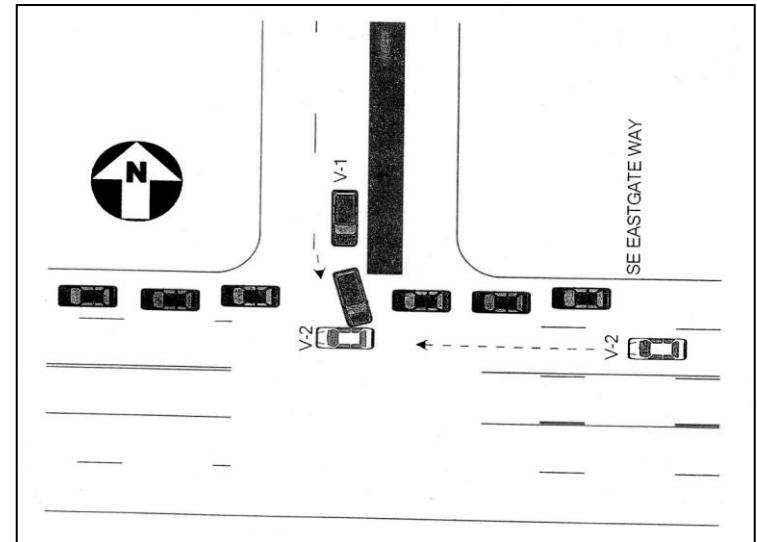
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Elapsed Time: 02:08

Between 2005 and 2010, nearly all the collisions at the Sunset Village Driveway—12 of 14—involved drivers attempting to turn EB on to Eastgate Way and colliding with a WB vehicle or, in one case, an EB vehicle in the turn lane. Three of the collisions were injury-causing.

Based on information contained in Bellevue Police Department reports, congestion was often a factor in these collisions: WB vehicles queuing for the light at 150th Ave SE and Eastgate Way block the view of the inside lane for SB drivers attempting to turn out of the driveway on to Eastgate Way.

These turning drivers tended to drive across the first lane thinking that the second was clear, only to hit a WB vehicle or be hit by it.



The most common collision pattern



Fattoria Blvd Project (2004): Replaced Two-Way Left Turn Lanes (TWLTL) with raised median that restricts left-turn egress movements from driveways except at signalized intersections. Reducing the number of left turn movements significantly improved the safety along this corridor (fewer collisions; especially T-bone).

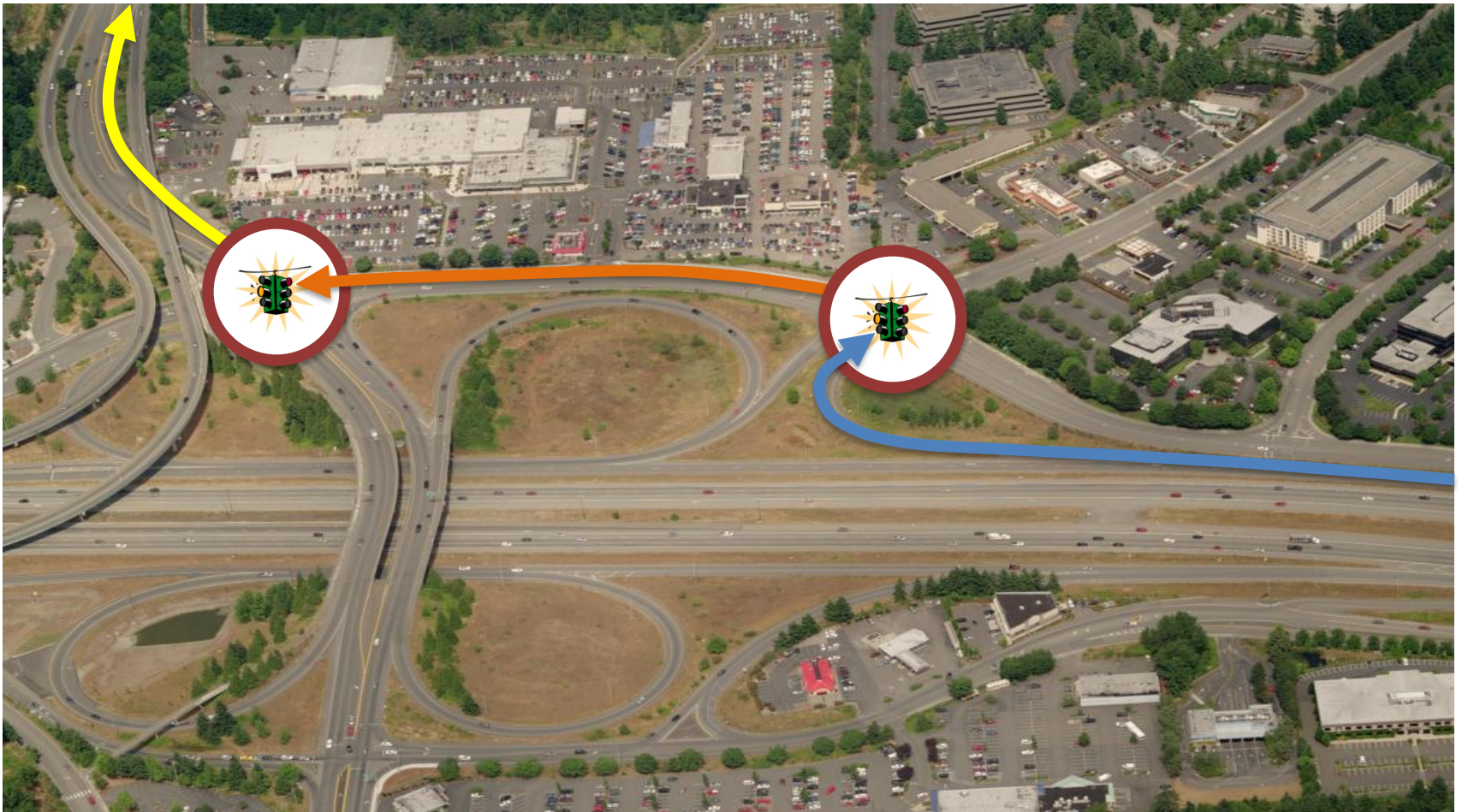


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Right-In/Right-Out Design



Illustrative Example #4



“Going from I-90 westbound to 148th northbound is sloppy. There are two stoplights and two turns on this very common path. How much congestion could we eliminate if there were no stoplights/turns/intersections?” - Public Opinion



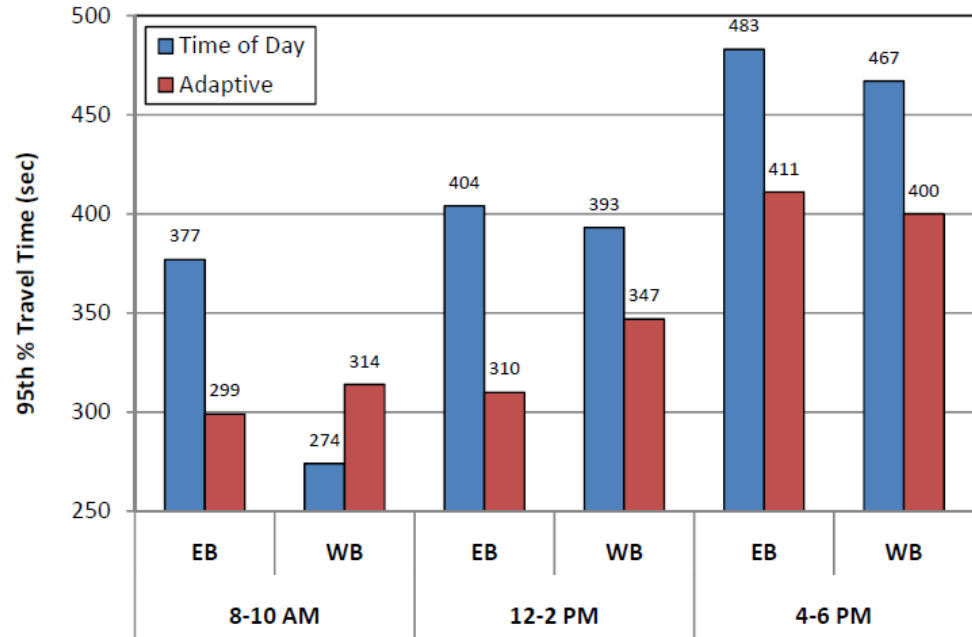
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I-90 WB to 148 NB

The City of Bellevue is moving all traffic signals citywide to a new signal system that uses adaptive traffic signal technology (SCATS system).

SCATS is better able to adjust to changing traffic patterns because it constantly monitors approaching traffic at every intersection and uses this information to update timing plans every signal cycle.

The City of Bellevue installed the SCATS system in the Factoria Blvd in 2010 and is upgrading the 148th, 150th, Eastgate Way, and SE 36th St (i.e Eastgate area) corridors to traffic adaptive as part of its 2012 program.



Travel time on the Burnside corridor (in Gresham, OR) decreased with the introduction of SCATS in 2007

156th Avenue SE at SE Eastgate Way (I-90 WB off-ramp)

TFP-162 (2002 Study)



Roundabout Concept





Golden, Colorado:

Travel Time through Corridor Reduced

- 78 sec (expected to go to 103 sec) to 68 sec

Access to Businesses Delay Reduced

- Before – average 28 seconds, maximum 118 seconds
- After – average 13 seconds, maximum 40 seconds
- Right turn/U-turn Safer and Quicker than Left Turn In

85th percentile Speed Reduced from 47 mph to 33 mph

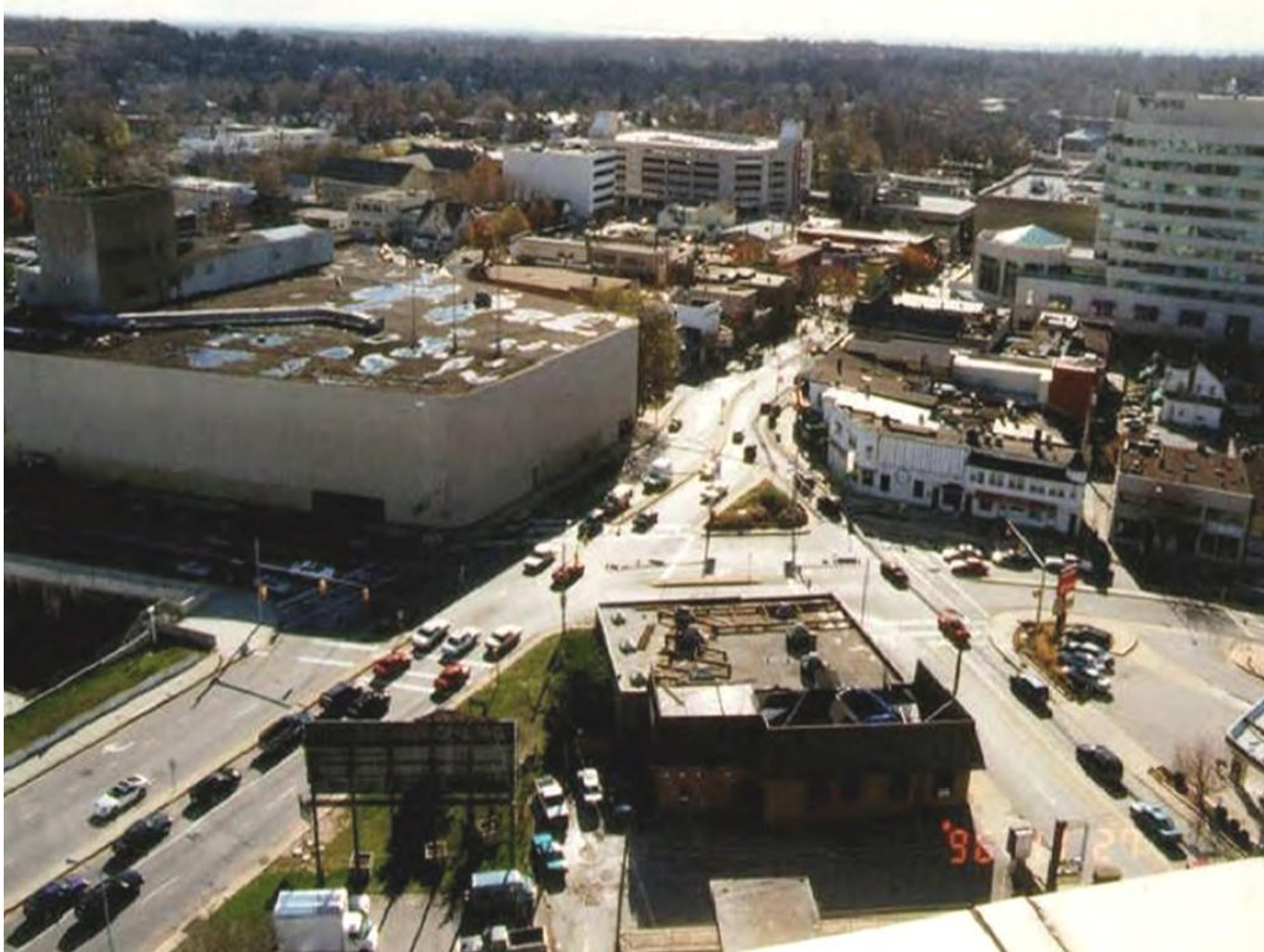
	3 years prior (96-98)	7 years after (00-06)	Accident Reduction
Accidents	360	150	-85%
Injuries	31	3	-96%
Daily Traffic	11,500	15,500	35%

In 2004, sales tax revenues had increased 60% since roundabouts constructed – only portion of city that had seen increase each year. Plus, over 75,000 sq ft additional retail/office space added.



4 roundabouts (1998) in ½ mile corridor.

Towson, Maryland (Before)



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Downtown Example

Towson, Maryland (After)



"The Roundabout has relieved traffic congestion in this busy area. Other improvements such as street-scaping and landscaping make Towson an even more attractive place for people to live, attend school, or take a break for a day of shopping."

- Towson (Maryland) Business Association's Year 2000 Business Directory



Improves safety

- **Fewer crashes** – Reduces conflict points (where the path of traffic movement crosses) from 32 to 8 – results in 35% decrease in number of crashes (relative to signals).
- **Less severe crashes** – Slower speeds (15-25 mph) and converting traffic movements to right-turns (no head-on and T-bone collisions) reduces severe injury crashes by 60 -80%.
- **Pedestrian friendly** – Crash reduction factor of 27%.

Reduces Delay & Improves Traffic Flow

- **Reduces delay** – Traffic not required to stop – only yield – so intersection can handle more traffic in same amount of time.
- **Improves traffic flow** – Conversion to roundabouts led to 20% reduction in delays.

Other

- **Aesthetics** – Creates a focal point that symbolizes the entrance to the community.
- **Environmental** – Cuts down vehicular emissions and fuel consumption by reducing vehicle idle time at intersections (33% less hydrocarbons; 36% less CO; 21% less nitric oxides).
- **Emergency management** – Not subject to power outages.

Source: NCHRP Report 572: Roundabouts in the United States. National Cooperative Highway Research Program, TRB, Washington DC, 2007.



Photo: BergerABAM



Roundabout included in the \$30M NE 36th St Bridge project, which spans SR-520 in Overlake (includes direct connections to the SR 520 trail).



Eastgate/I-90

Land Use & Transportation Project

Existing Conditions



For Illustrative Purposes Only



Eastgate/I-90
Land Use & Transportation Project

Roundabout Concept



For Illustrative Purposes Only



Eastgate/I-90
Land Use & Transportation Project

Roundabout + Concept

Questions or Comments on Arterial Concepts?



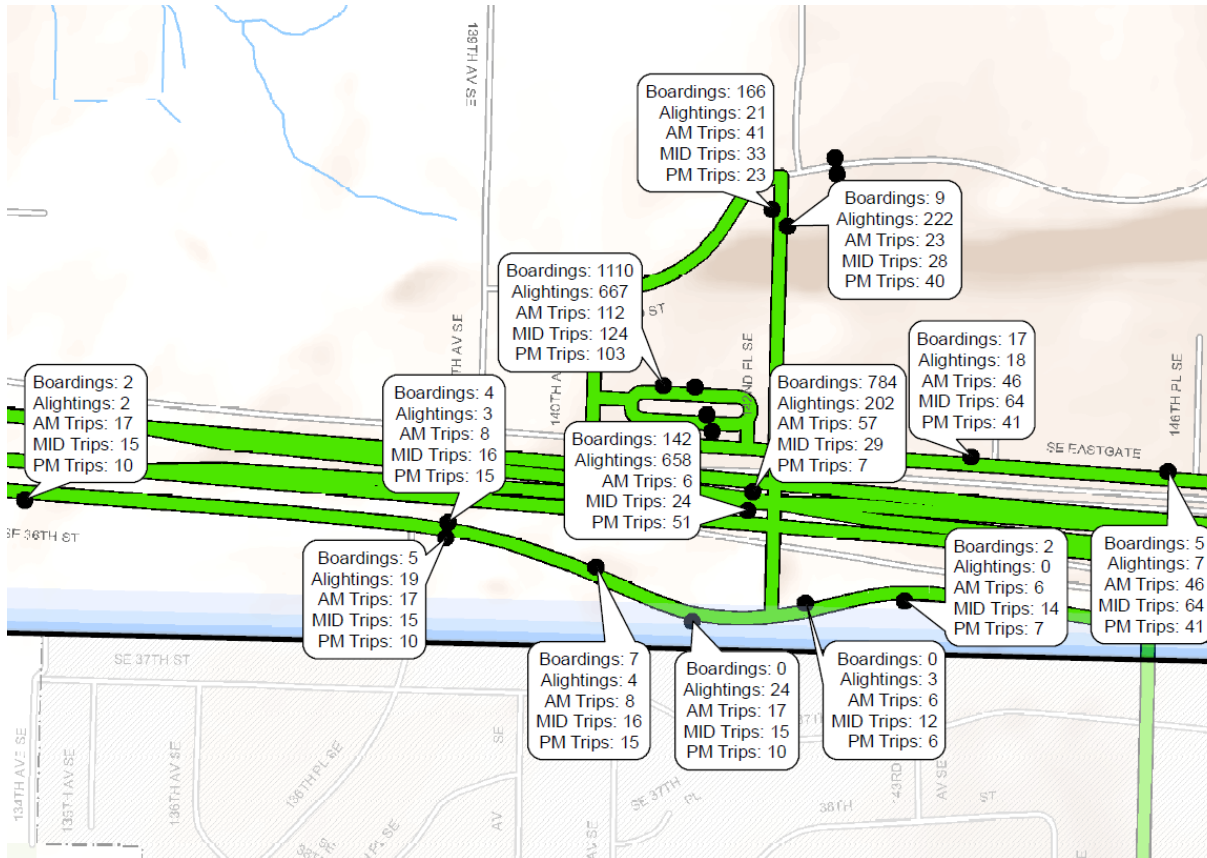


Transit Services & Facilities

“Continue to evolve Eastgate’s transportation infrastructure to a high performing, multi-modal system, including coordinating with service providers on increased transit service to the area.” – Bellevue Council Principle

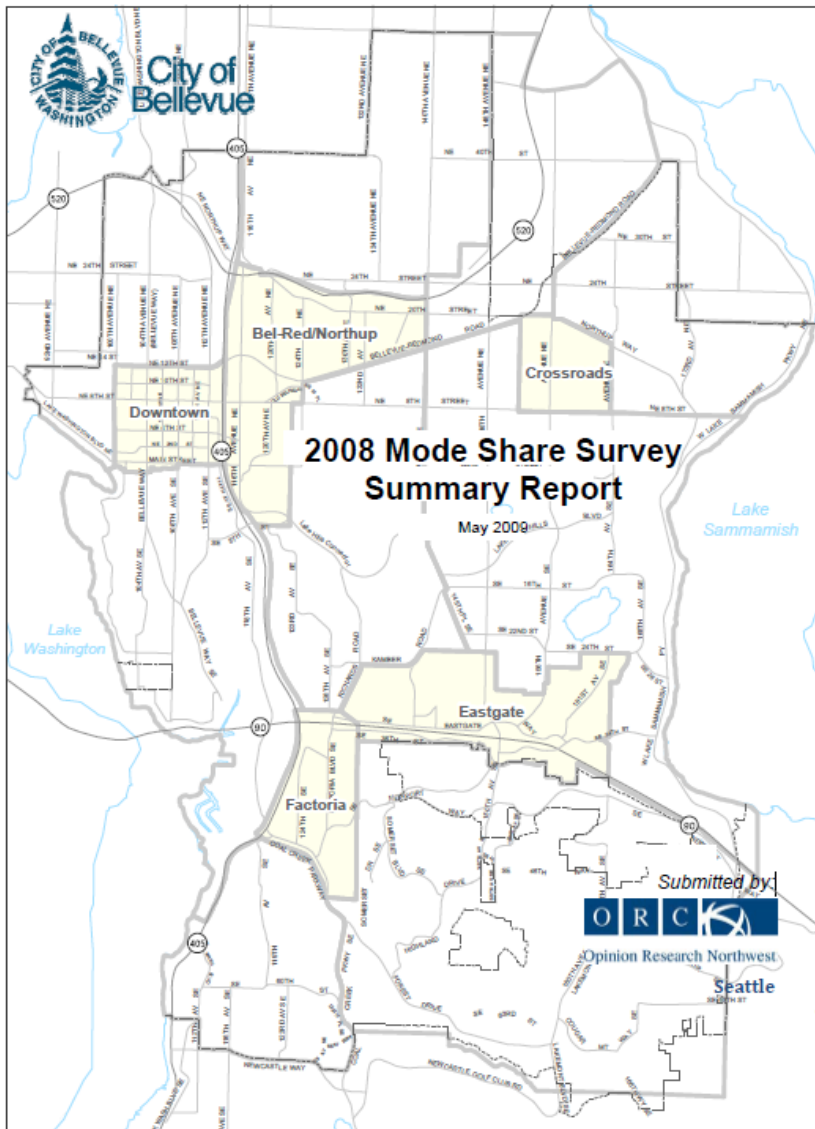
The Four Constraints on Transit

Capital Funds	Operating Funds	Land-Use Measures	Transit Priority
Money to Build Infrastructure and Buy Vehicles	Money to Operate Vehicles and Maintain the System	The Match Between Transit Investments and Land Use	Roads are Optimized for Transit and Pedestrians



- Average weekday boardings/alightings increased from **2,016 (2000)** to **5,471 (2005)** in the project area, a **171% increase**.
- Average weekday boardings/alightings increased from **5,471 (2005)** to **6,368 (2009)** in the project area, a **16% increase**.





Non-Drive-Alone Mode Split Comparison to City's Targets

	2008 Actual	2005 Target	Gap
Downtown Bellevue	39%	40%	-1
Bel-Red / Northup	19%	25%	-6
New Bel-Red	15%	--	--
Crossroads	15%	25%	-10
Eastgate	27%	35%	-8
Factoria	31%	20%	11

Drive-Alone Rate Over Time by MMA

	2008	2005	2002	2000
Downtown Bellevue	61%	71%	68%	68%
Bel-Red / Northup	81%	74%	80%	80%
Crossroads	85%	83%	81%	84%
Eastgate	73%	77%	74%	76%
Factoria	69%	79%	85%	N/A

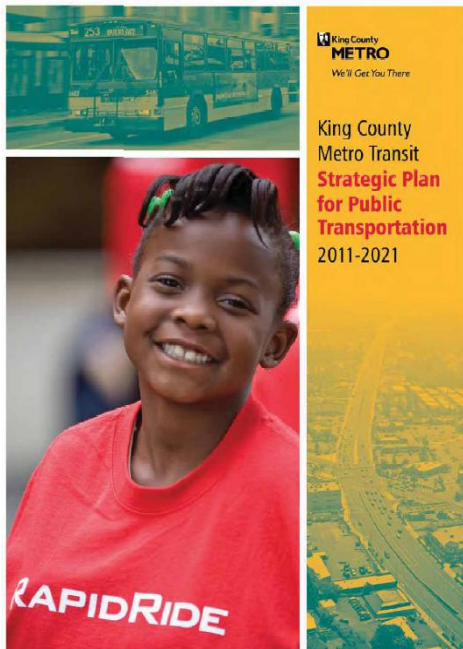




Near-Term Transit Strategies

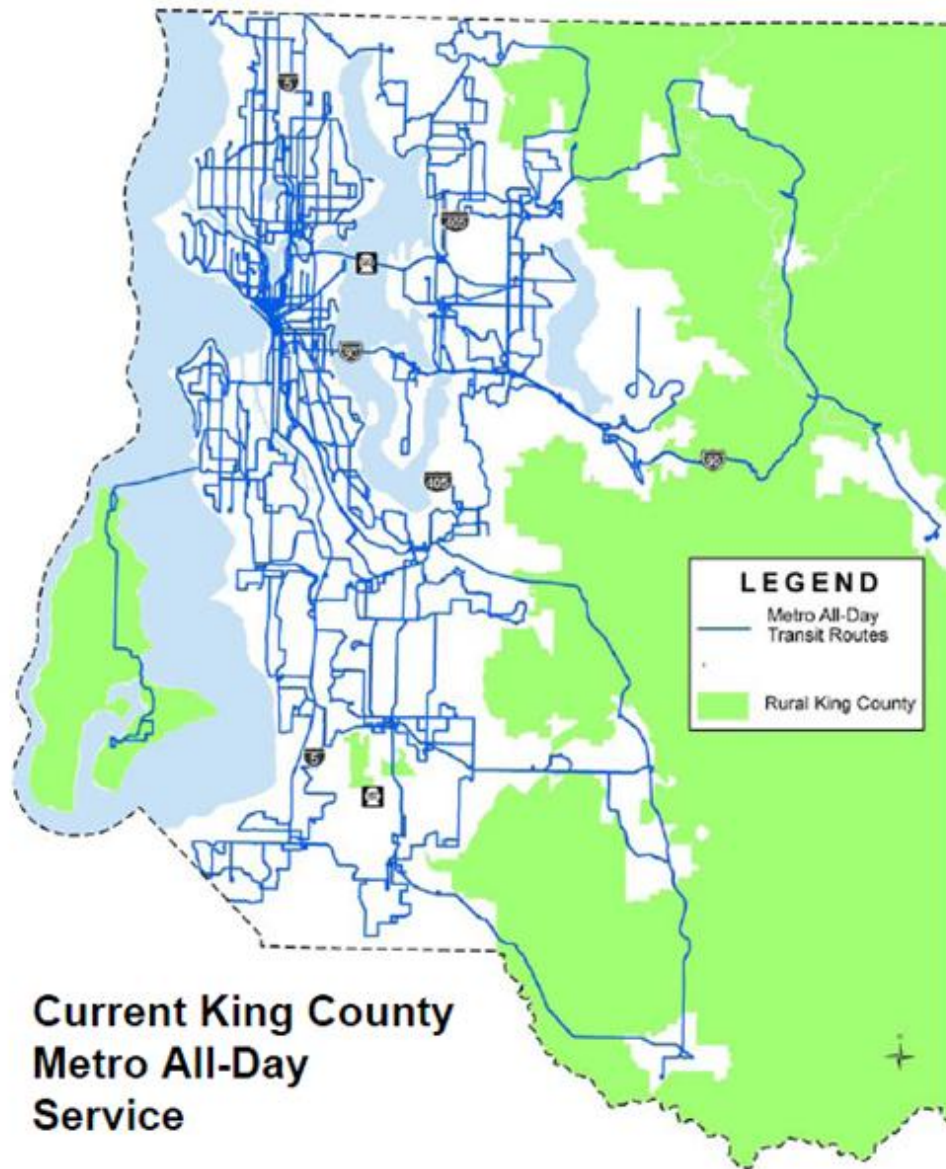
“Not enough transit service in the surrounding neighborhoods (the Park & Ride is great, but good luck getting over there, even if you live within a 3-mile radius).”





Key Considerations:

1. Be more productive & cost effective
2. Recognizes everyone contributes, everyone benefits
3. Address growth and respond to demand

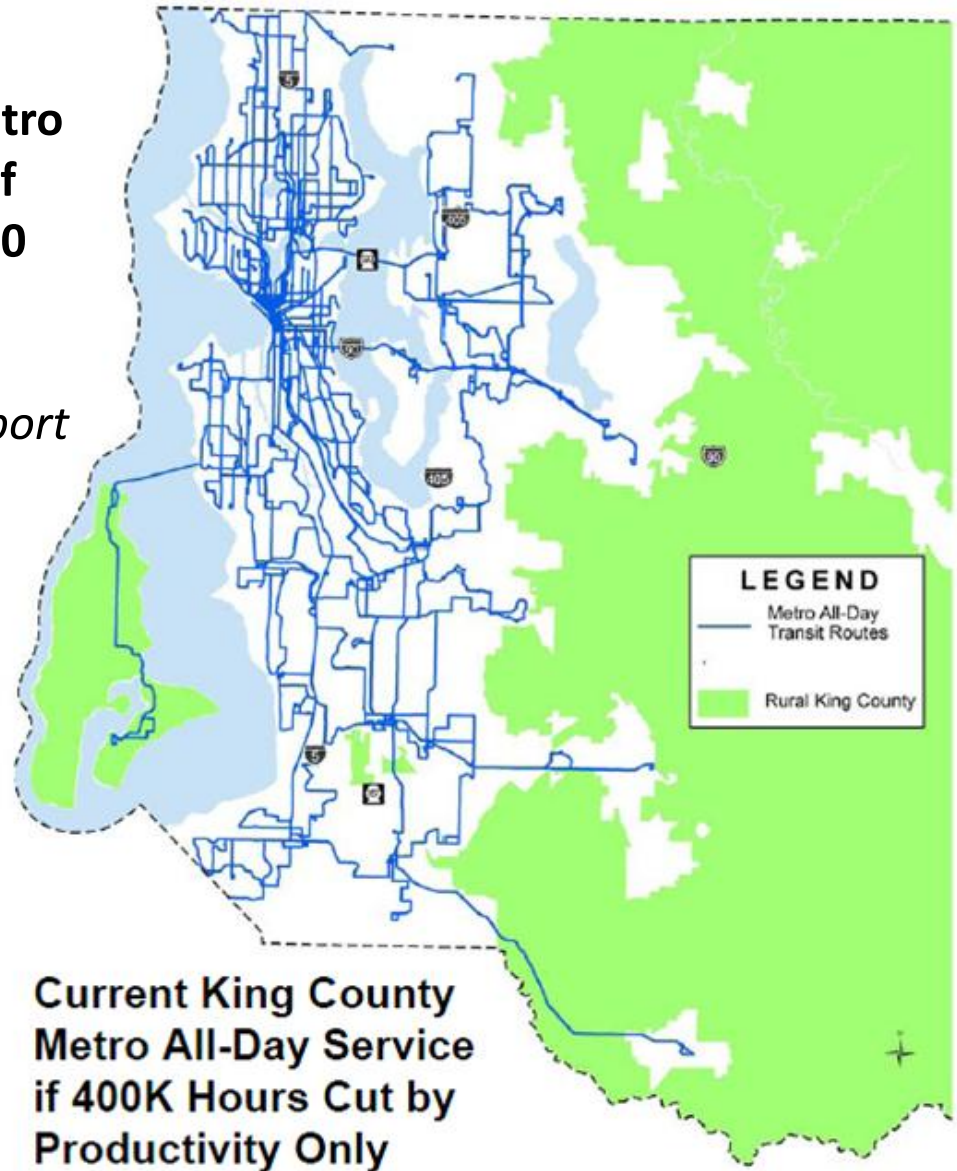


Eastgate/I-90
Land Use & Transportation Project

Transit Budget Constraints

“Assuming no change in revenue sources between 2009 and 2015, Metro Transit projects a revenue shortfall of \$1.176 billion and faces up to 600,000 service hour cuts.”

- Regional Transit Task Force Final Report & Recommendations, October 2010



Thresholds and points used to set service levels

FACTOR	MEASURE	THRESHOLDS	POINTS
Land Use	Households within ¼ mile of stops per corridor mile	3,110 ¹	10
		2,080	7
		1,040	4
		<1,040	0
	Jobs within ¼ mile of stops per corridor mile	17,390 ²	10
		11,480	7
		5,810	4
		<5,810	0

1 Thresholds for land use factors were set based on where a corridor scored relative to the highest score of all corridors. Thresholds for households per mile were set based on 75%, 50% and 25% of the highest score.

2 Thresholds for jobs per corridor mile were set based on 50%, 33% and 16% of the highest score

“Eastgate Park and Ride is an important asset. It should be considered a transit center with more employment and residential uses created within a short walk from the station.”



“Better integrate land use and transportation across Eastgate, which may include consideration of transit-oriented development in portions of the area. Changes in land use should be informed by transportation opportunities and impacts. For example, the large Eastgate park and ride facility may create an opportunity for a transit overlay district, with well integrated land use and transportation performance.”

– Bellevue Council Principle

Eastgate P&R (2004)
=\$33M

**Eastgate Transit
Access (2006)**
=\$39M

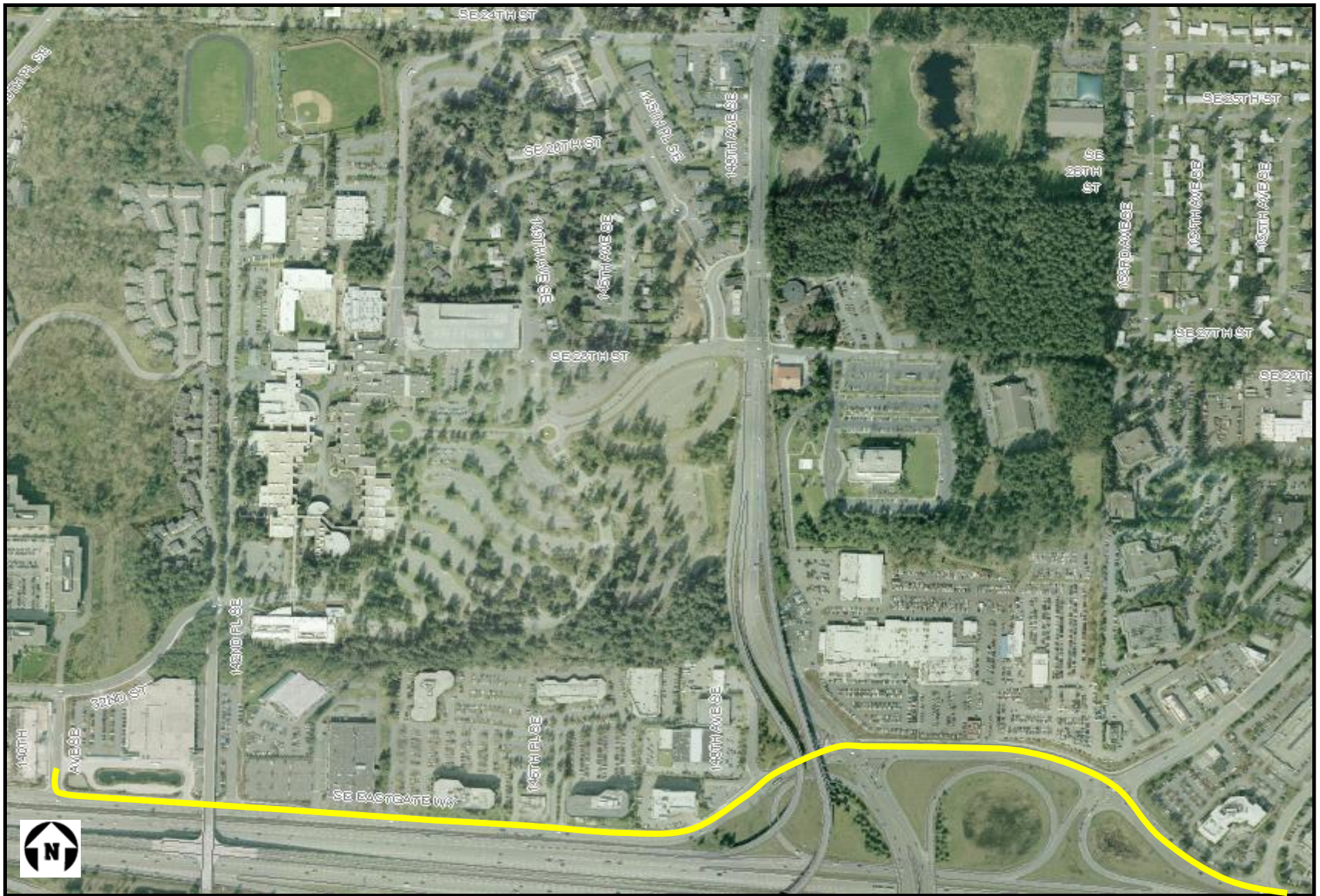


Eastgate/I-90
Land Use & Transportation Project

Recent Transit Investments

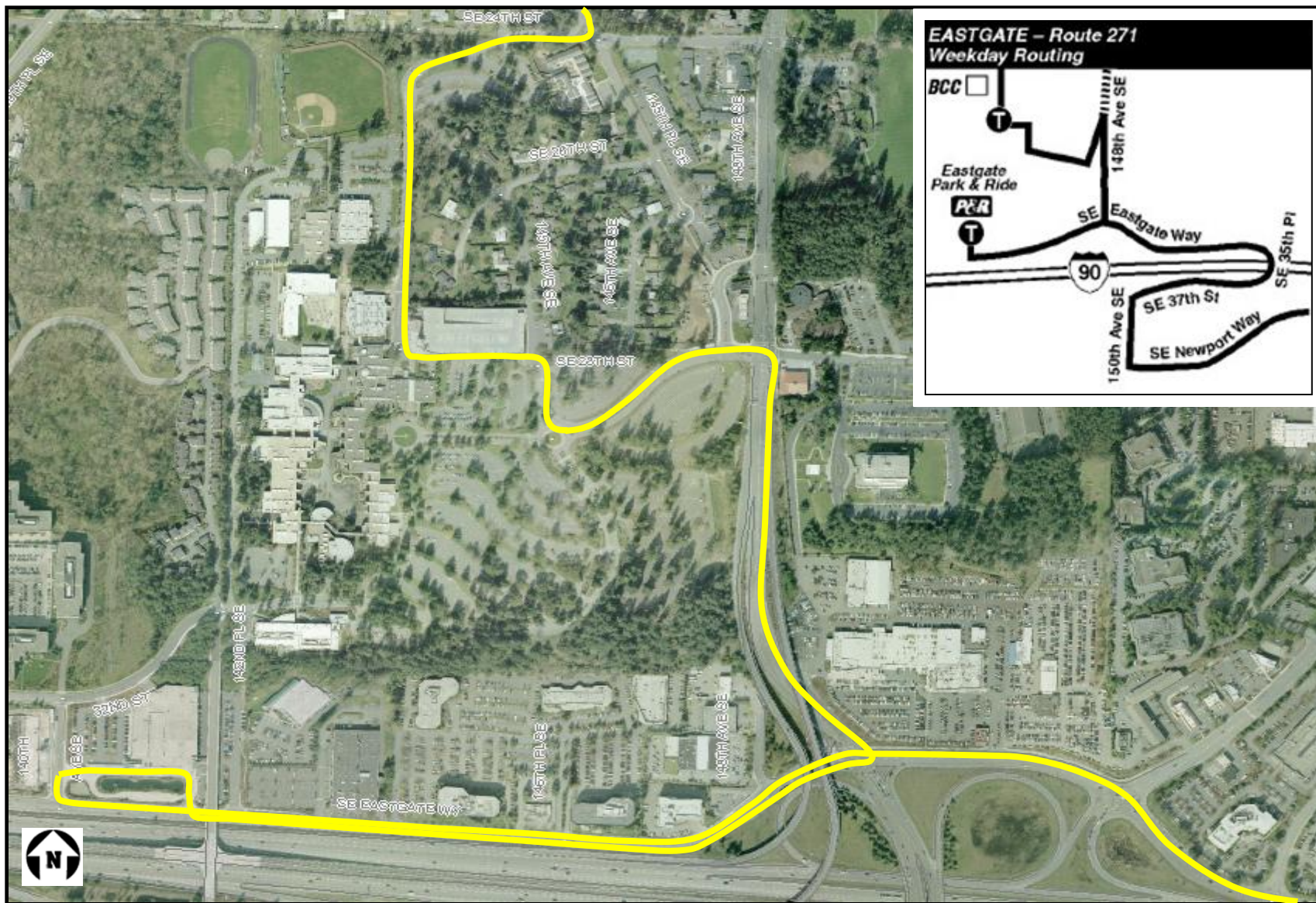
“Bus transit through Bellevue College takes too long.”





Eastgate/I-90
Land Use & Transportation Project

Current Transit Routing



Eastgate/I-90
Land Use & Transportation Project

Current Transit Routing





Long-Range Transit Strategies



Eastgate/I-90
Land Use & Transportation Project

ST-3 Planning

“Start planning now for possible Sound Transit 3 - future Light Rail expansion to Eastgate P&R/Bellevue College, Eastgate Business District, and eastwards to Issaquah Transit Center, Downtown Issaquah, Issaquah Highlands, and Sammamish.”





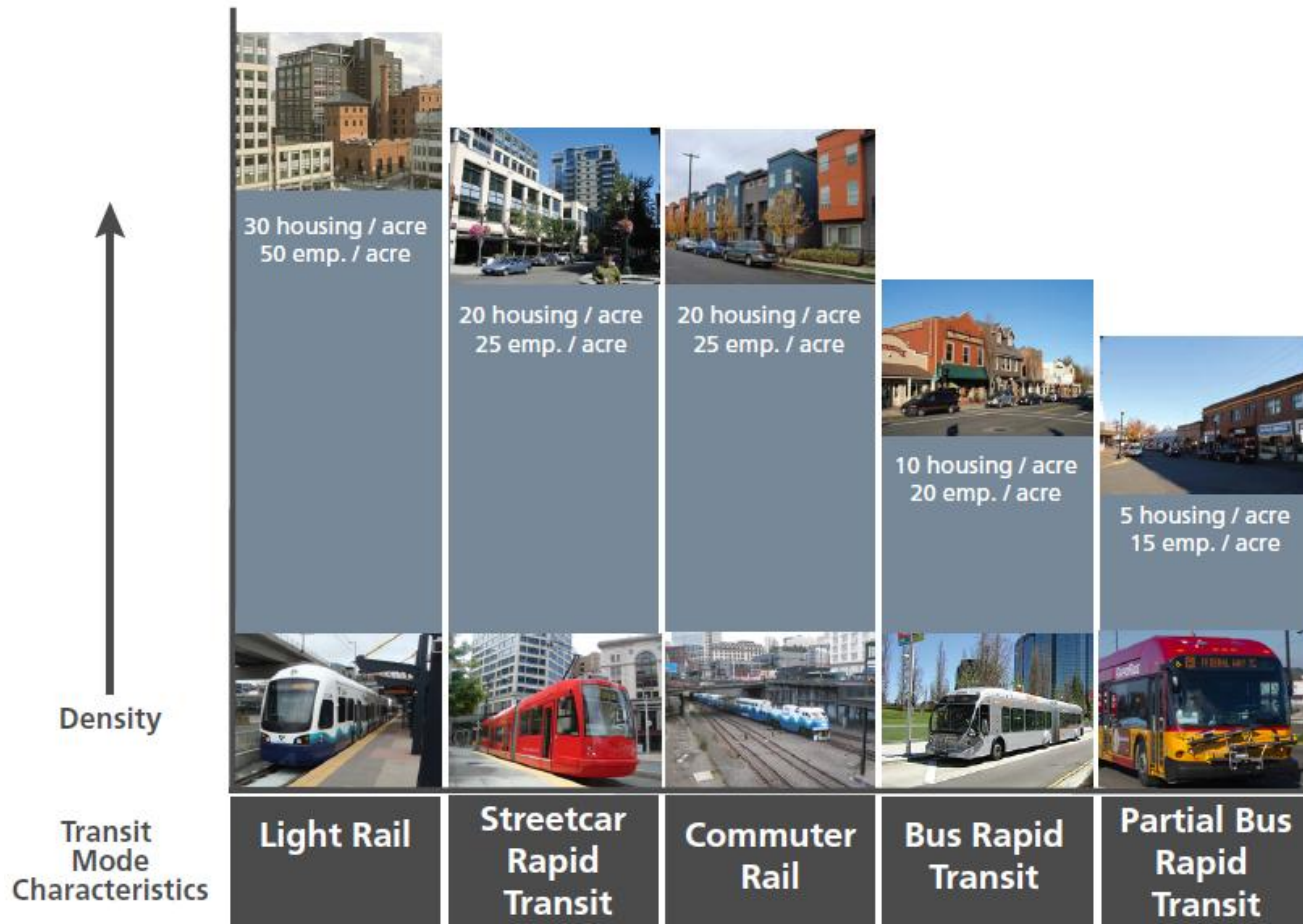
The Sound Transit Phase 2 (ST-2) measure approved by voters in 2008 is the means by which light rail will be extended from Seattle to Bellevue and Redmond (the East Link project).

ST-2 also included \$82 million in funding for detailed study of ST3, including “high capacity transit” or HCT from Bellevue to Issaquah. It is not clear when Sound Transit will start the ST-3 study.

The Eastgate/I-90 Project provides an opportunity for Bellevue to work with other agencies to determine potentially desirable station locations in advance of the Sound Transit study.



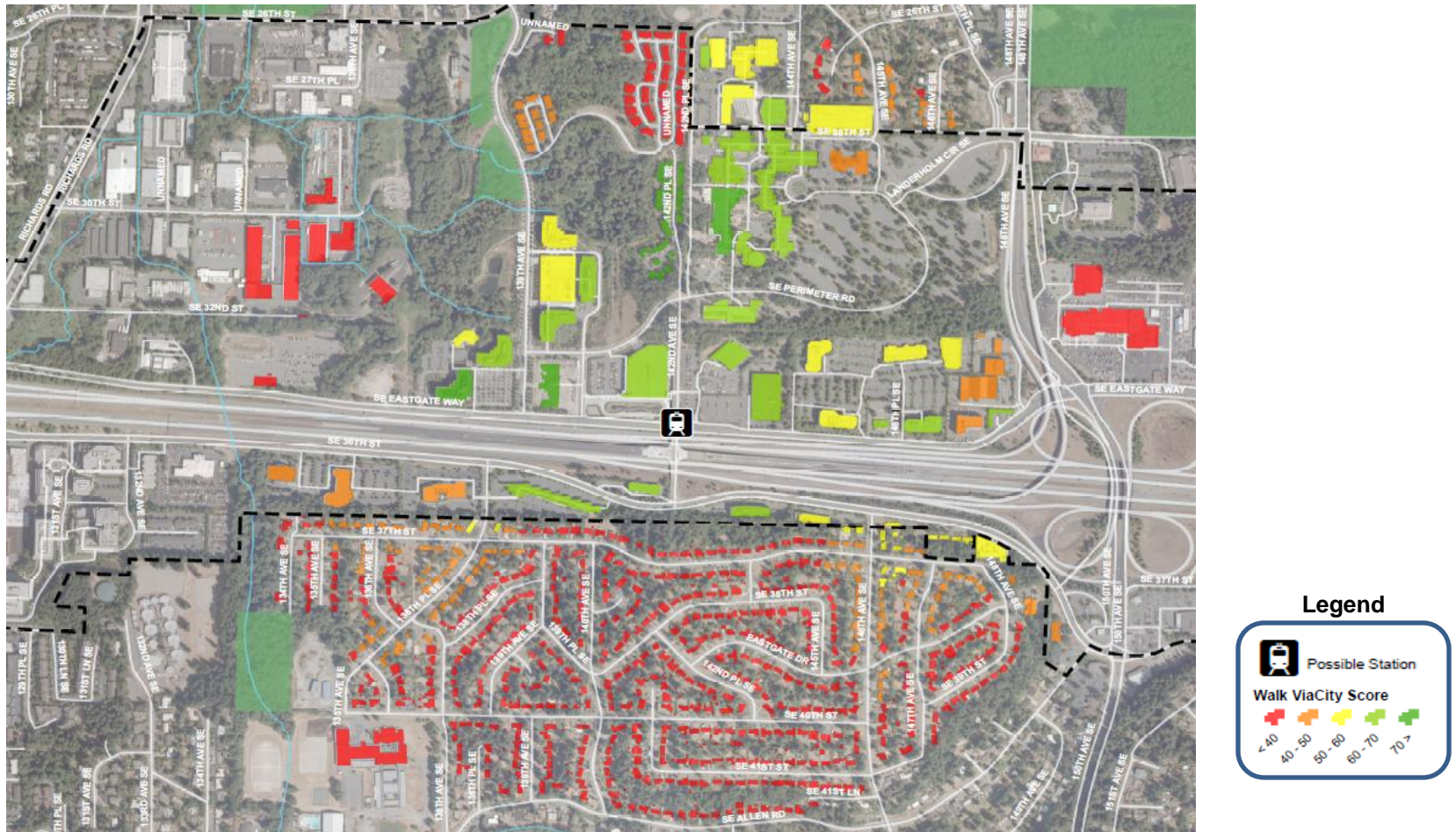
Evaluate “geographic value” of land use alternatives and potential to support high capacity transit investments in the corridor.



Source: Nelson\Nygaard –
“Summarizes national research into the minimum densities that may be required to support investments in different modes. It is representative of industry standard densities in station areas or corridors for the various modes. These figures should not be taken too literally; depending on the amount of ridership one requires and cost one is willing to take on, lower densities may be acceptable.”



Quantify costs/benefits of connectivity improvements to potential future high capacity transit station locations.

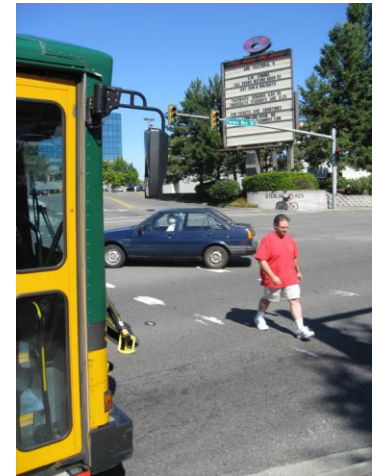


Questions or Comments on Transit Service & Facility Concepts?





Pedestrian, Bicycle, & Connectivity





Illustrative Example #1

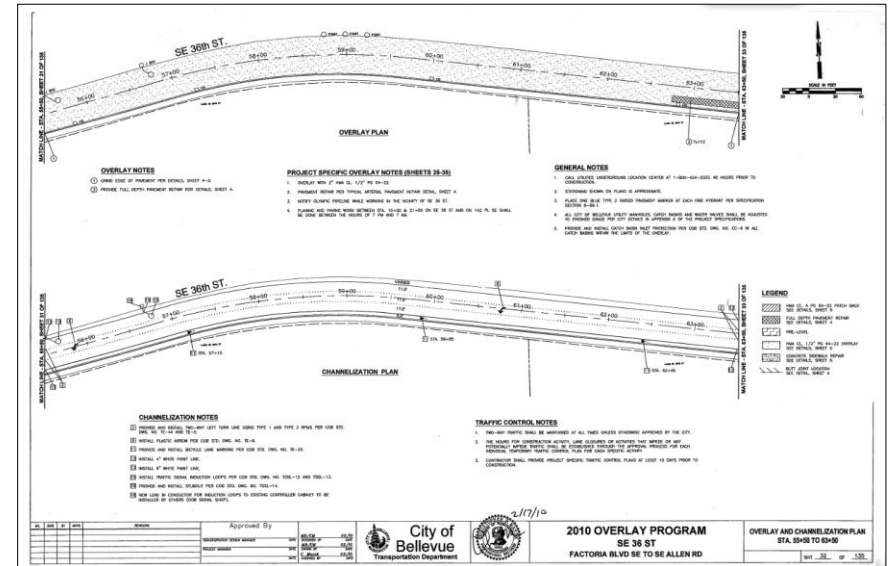


Eastgate/I-90
Land Use & Transportation Project

Greenway Trails

“Remember it is more than just traffic flow--this is a neighborhood! I would like to see safer bicycle lanes on the frontage roads.”





Pavement overlays offer opportunities to improve the riding surface for cyclists, and to restripe the street with bike lanes.



Eastgate/I-90
Land Use & Transportation Project

SE 36th Street Overlay

“Improve the Eastgate Corridor’s urban design quality and coherence, recognizing the area as a major City gateway and prominent location on the Mountain to Sound Greenway.” – Bellevue Council Principle



		Response Total	Response Percent
Very Desirable	<div></div>	108	53%
Somewhat Desirable	<div></div>	66	32%
Neutral	<div></div>	25	12%
Undesirable	<div></div>	6	3%
Total Respondents		205	
(skipped this question)		61	



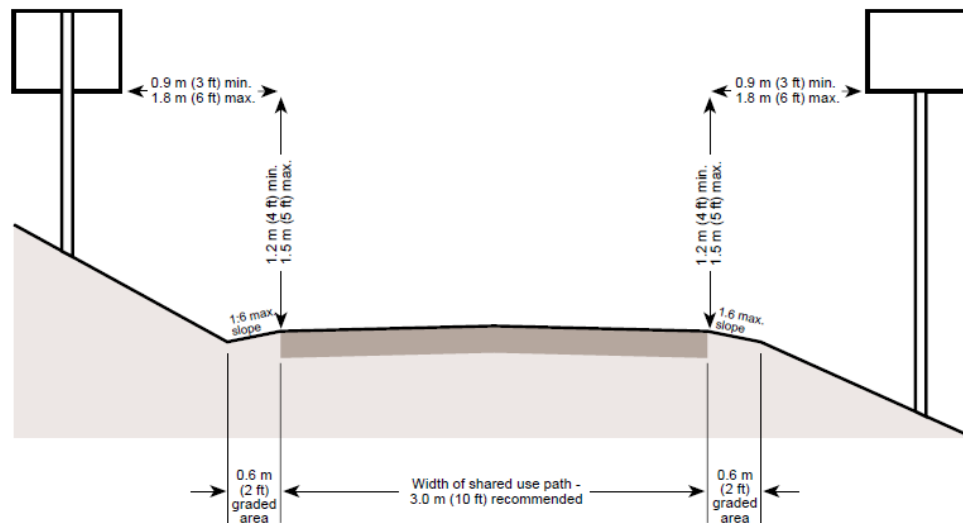
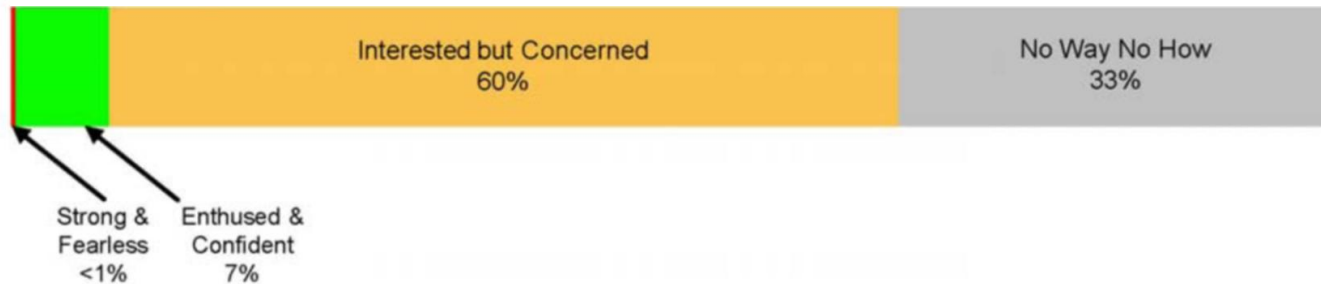
		Response Total	Response Percent
Very Desirable	<div></div>	29	14%
Somewhat Desirable	<div></div>	40	19%
Neutral	<div></div>	41	20%
Undesirable	<div></div>	96	47%
Total Respondents		206	
(skipped this question)		60	



Eastgate/I-90
Land Use & Transportation Project

Public Opinion

Four Types of Transportation Cyclists By Proportion of Population



- The length of off-street bicycle paths per unit of area has a stronger correlation with the number of bicycle commuters than the length of on-street bicycle lanes. (PSU, 2003)
- The risk of injury for cyclists riding on physically-separated bike paths is about 28% lower than for cyclists riding on comparable Montreal roads unprotected from traffic. (Harvard, 2011)



“I-90 trail has a substantial gap that forces users to ride on the very busy road or along sidewalks with busy driveway access. I understand that a separate trail that connects the facilities would be very costly but it would be fabulous.”





City of Bellevue

Eastgate/I-90 Corridor Study Final Report

November 2002

Prepared by



Pertect Engineering, Inc.
Everett, Washington



RCIP-13

Mountain to Sound Trail: 148th Avenue SE to 142nd Place SE



RCIP-12

Mountain to Sound Trail: SE 35th Place to 148th Avenue SE

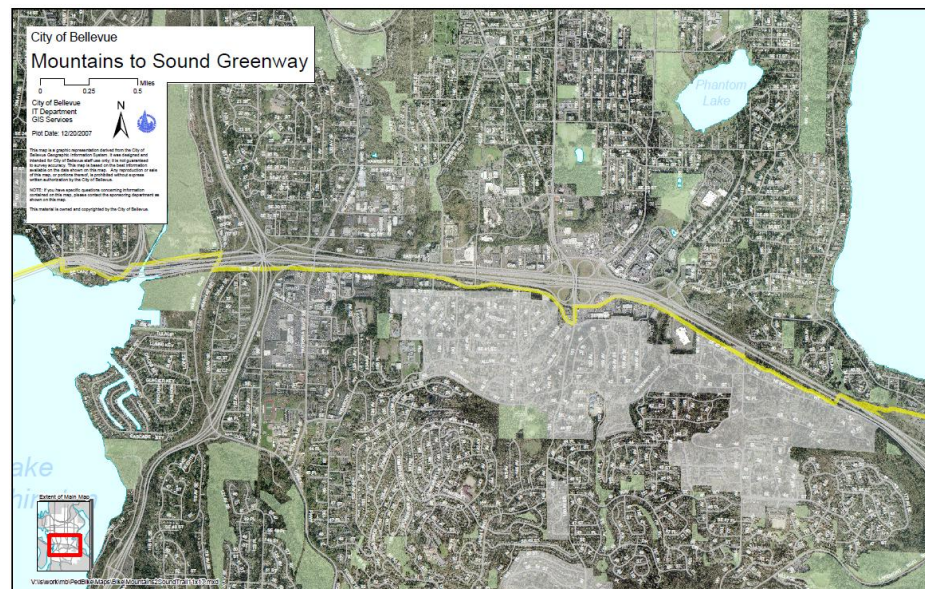


Eastgate/I-90
Land Use & Transportation Project

2002 Transportation Study



2009 city of bellevue pedestrian & bicycle transportation plan report



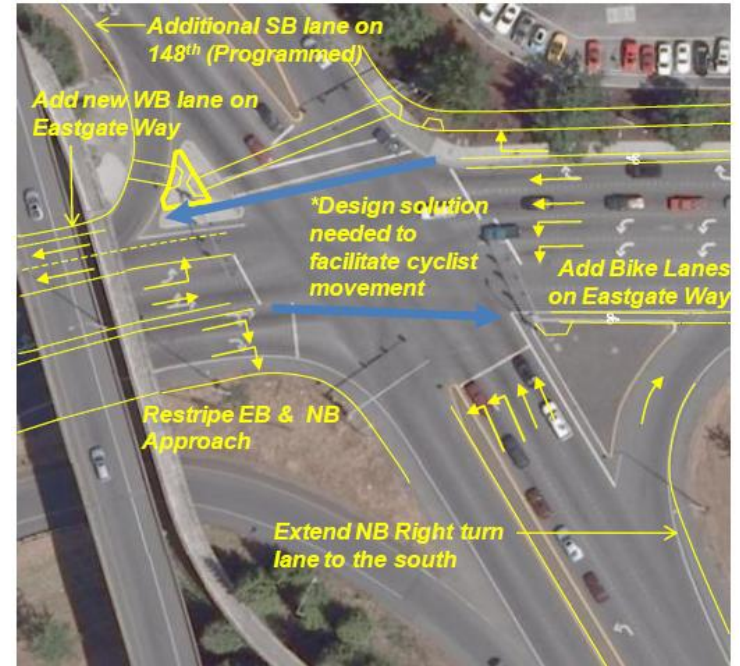
Eastgate/I-90
Land Use & Transportation Project

2009 Ped-Bike Plan

South of I-90 Factoria Blvd & SE 36 Street



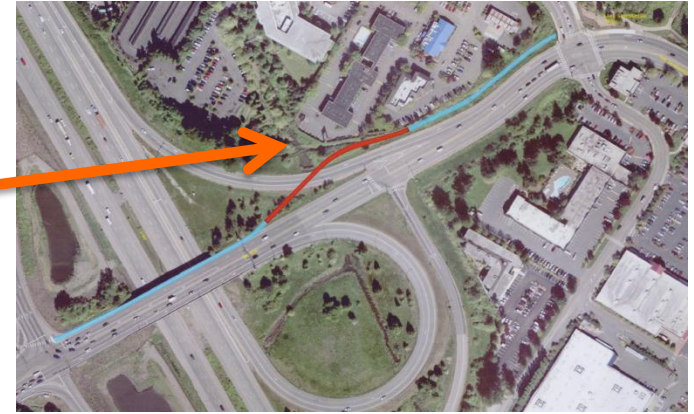
North of I-90 SE Eastgate Way & 150 Ave SE



Design solutions needed to facilitate cyclist movements at intersections along Mountains to Sound Greenway Trail.



This bridge over I-90, a \$6M project, will complete a trail about 1,200 feet long, and connect the SR 900 boardwalk with the Sammamish Trail.



A multi-use pathway facility on structures that WSDOT constructed over an environmentally constrained area adjacent to an expanded segment of SR 900.



Develop a trail design concept for realizing the Greenway Trail that supports the preferred land use vision. Position the City to seek funding for completion of a more detailed “design report” that is based off of survey/mapping.



Evaluation of potential MTSG trail alignments:

- North of I-90 (16 segments) and
- South of I-90 (13 segments).



Illustrative Example #2



Eastgate/I-90
Land Use & Transportation Project

Pedestrian Facilities

“Lack of transportation alternatives. Would like to walk and bike and use the bus to get places, but cars are the only practical choice right now.”





No sidewalks on north-side of SE 36 SE east of 142 PI SE



Narrow sidewalks on 142 PI SE Bridge inadequate for transit serving passengers with disabilities.



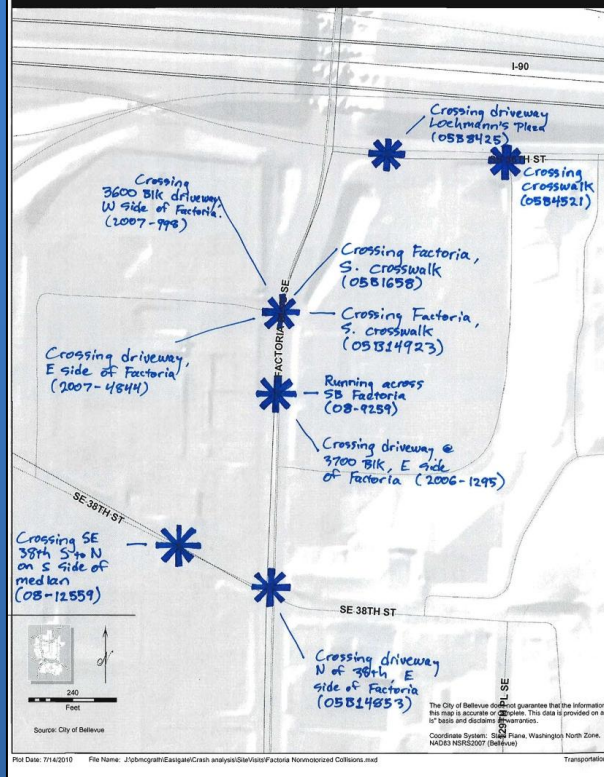
No sidewalks on either side of Eastgate Way west of 142 PI SE



Design of Sunset Village Driveway on Eastgate Way uncomfortable for pedestrians.



Factoria Nonmotorized Collisions



Since 2004 there have been more than 10 pedestrian or bicycle accidents (most with injuries) along SE 38th and the portion of Factoria Boulevard connecting to the regional trail.



2002 Eastgate/I-90 Corridor Study

In 2011, the City is proceeding with construction of the 124th Avenue SE Connection; a grant funded project built on WSDOT ROW that will construct a 10' wide paved multi-purpose trail connecting the north end of 124th Ave SE near SE 38th St to the existing Mountains to Sound Greenway trail along I-90.

Completing the trail will allow bicyclists to bypass the congestion along Factoria Blvd; improving both comfort and safety. The total project cost is estimated to be \$1.2 million. \$4 of every \$5 in project costs will be funded through grants.

Eastgate / I-90 Corridor Study CIP-5 124th Avenue/I-90 Multi-Purpose Trail

Project Description

This project is intended to provide a non-motorized connection between the intersection of Factoria Boulevard and SE 36th Street and the north end of 124th Avenue SE, which is the City of Bellevue preferred bicycle route paralleling Factoria Blvd. Construct a ten foot wide paved multi-purpose trail connecting the north end of 124th Avenue SE near SE 38th Street to the existing Mountains to Sound trail along I-90 near Factoria Boulevard.

Preliminary Opinion of Cost

- \$840,000 to \$1,120,000 (2002 Dollars)

Involved Departments/Agencies

- City of Bellevue - Lead Agency
- WSDOT/FHWA - Project is located in WSDOT ROW

Operational Analysis

There are currently no bicycle facilities connecting the north end of 124th Avenue SE to the intersection of Factoria Boulevard and SE 36th Street. Bicyclists using 124th Avenue SE (the designated north-south bicycle route through Factoria) must currently share Factoria Boulevard between SE 38th Street and SE 36th Street with high traffic volumes, which are incompatible with bicycle traffic.

Completing the trail between 124th Avenue SE and the existing Mountains to Sound trail will allow bicyclists to bypass the congestion along Factoria Boulevard, improving both comfort and safety.

Environmental Documentation

Property Impacts

ROW - Project is located in WSDOT ROW with potential impact to business parking to smooth horizontal alignment.

Residences - No Impacts

Businesses - No Impacts

Utilities

Sidewalks or trails over utilities are not considered to be an issue for utility operations.

Environmentally Sensitive Areas

Unstable Soils - Not evident

High Earthquake Probability - Not a construction issue

Environmental Documentation and Permits

SEPA Checklist - Required

Clear and Grade Permit - Required

NEPA Environmental Classification Summary - Required if federally funded

ESA Compliance - Required if federally funded

WSDOT/FHWA Review - Required because project is located in WSDOT ROW

Public Involvement

The Eastgate/I-90 Corridor Study included public open houses, two workshops, and three design charrettes. This project was suggested at a design charrette focused on the Factoria area. It is also a project in the current City of Bellevue Pedestrian/Bicycle Plan.

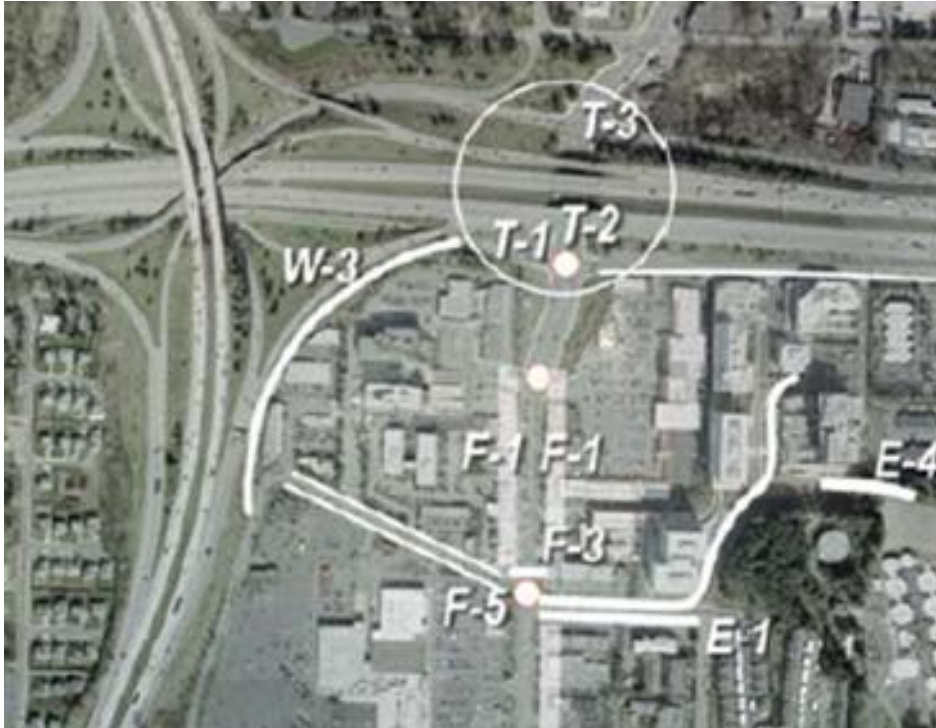
The Eastgate/I-90 Corridor Study Technical Advisory Committee (TAC) and Citizen's Advisory Group (CAG) reviewed and evaluated 80 separate projects. This project received an overall rating of 5 on a scale of 1 to 5, with 5 being "Best", and was identified as a preference by the CAG and TAC.

Peritect Engineering, Inc.
November 3, 2002



Eastgate/I-90 Land Use & Transportation Project

Making Progress



Making Progress:

- T-1: I-90 Trailhead and signage
- F-1: Policy to consolidate driveways
- F-5: Install countdown signals
- W-3: 124th Ave SE Trail

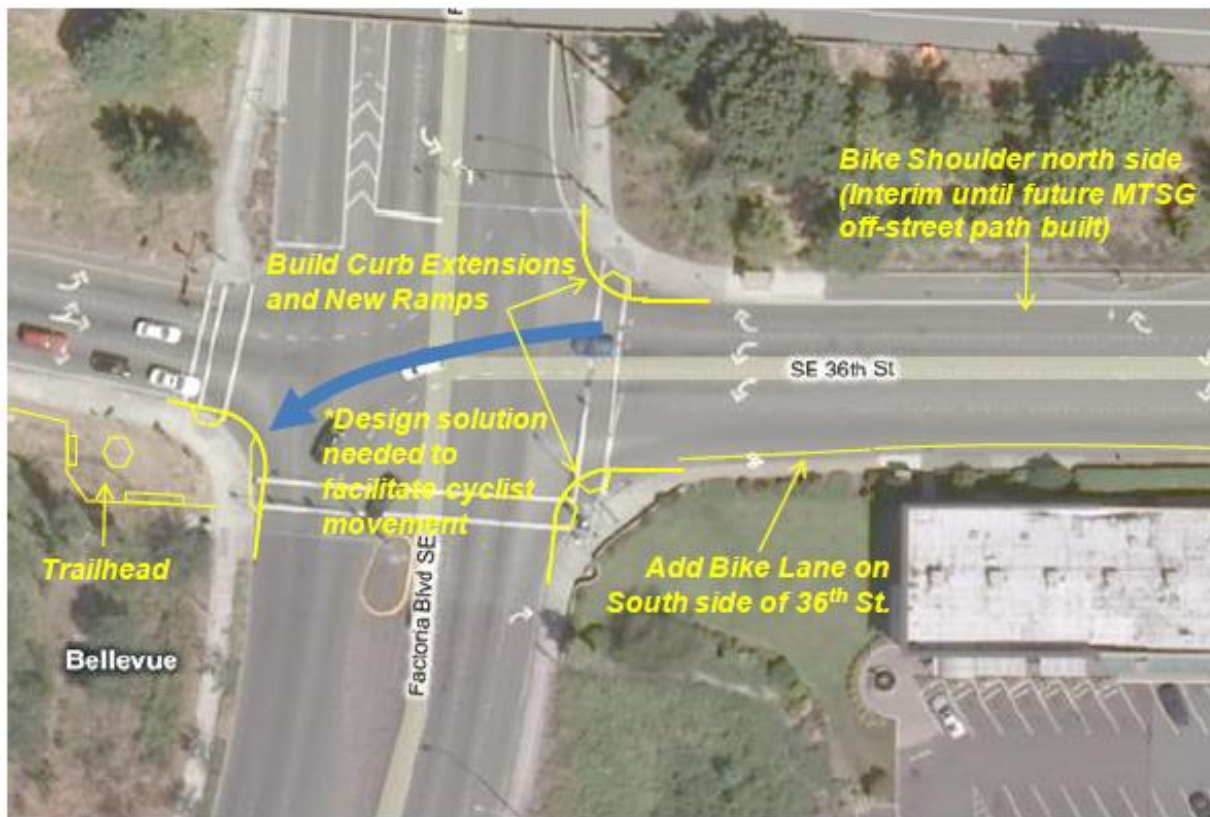
To Do:

- T-2: Improve intersection
- T-3: Improve intersection
- E-1: Improve sidewalks
- E-4: Construct stairway
- F-3: Improve pedestrian crossing

“In this future Factoria, pedestrians can stroll along streets lined with shops and services, with a planting strip or parking separating them from moving vehicles.”

- Factoria Area Transportation Study

Factoria Blvd & SE 36th Street



- **Concept:** Curb extensions, curb ramps, and bike improvements.
- **Benefits:** Intersection already built out for auto capacity.
- **Cost Estimate:** \$220K





Illustrative Example #3



Eastgate/I-90
Land Use & Transportation Project

Connectivity

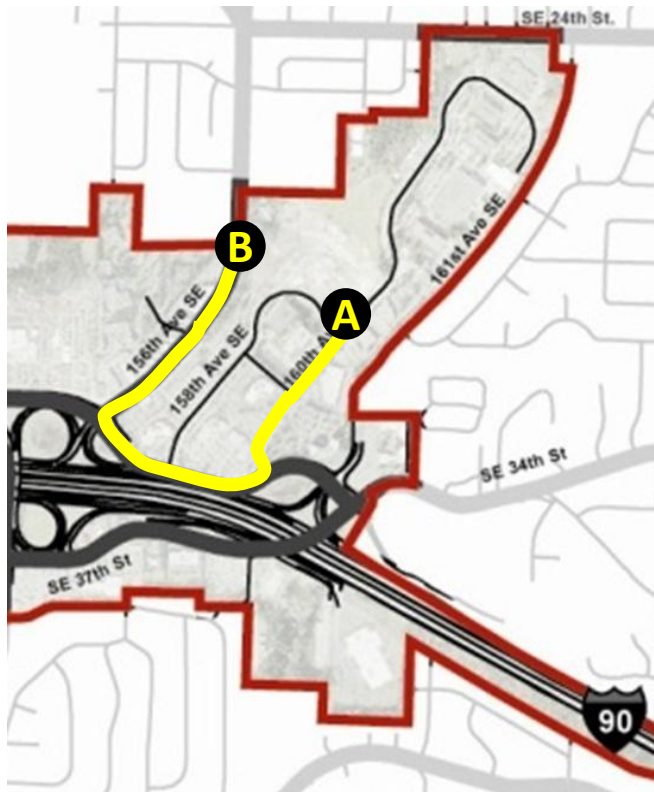
“We have plenty of connectivity with 405 and I-90 already. What we need is better intra Eastgate connectivity, and better flow between Eastgate and areas north of I-90 and west of 405 -- the more bridges, the better.”



Eastgate/I-90
Land Use & Transportation Project

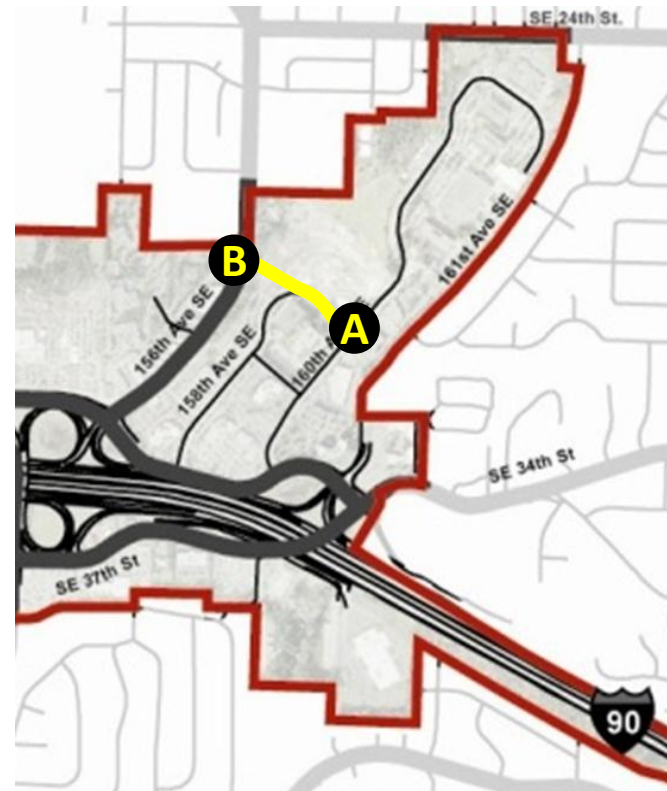
Community Vision

“Increase connectivity across the Eastgate corridor, addressing the area’s numerous barriers such as its limited street and non-motorized (both pedestrian and bicycle) network, and stand-alone developments.” – Bellevue Council Principle



1.2 miles

vs.

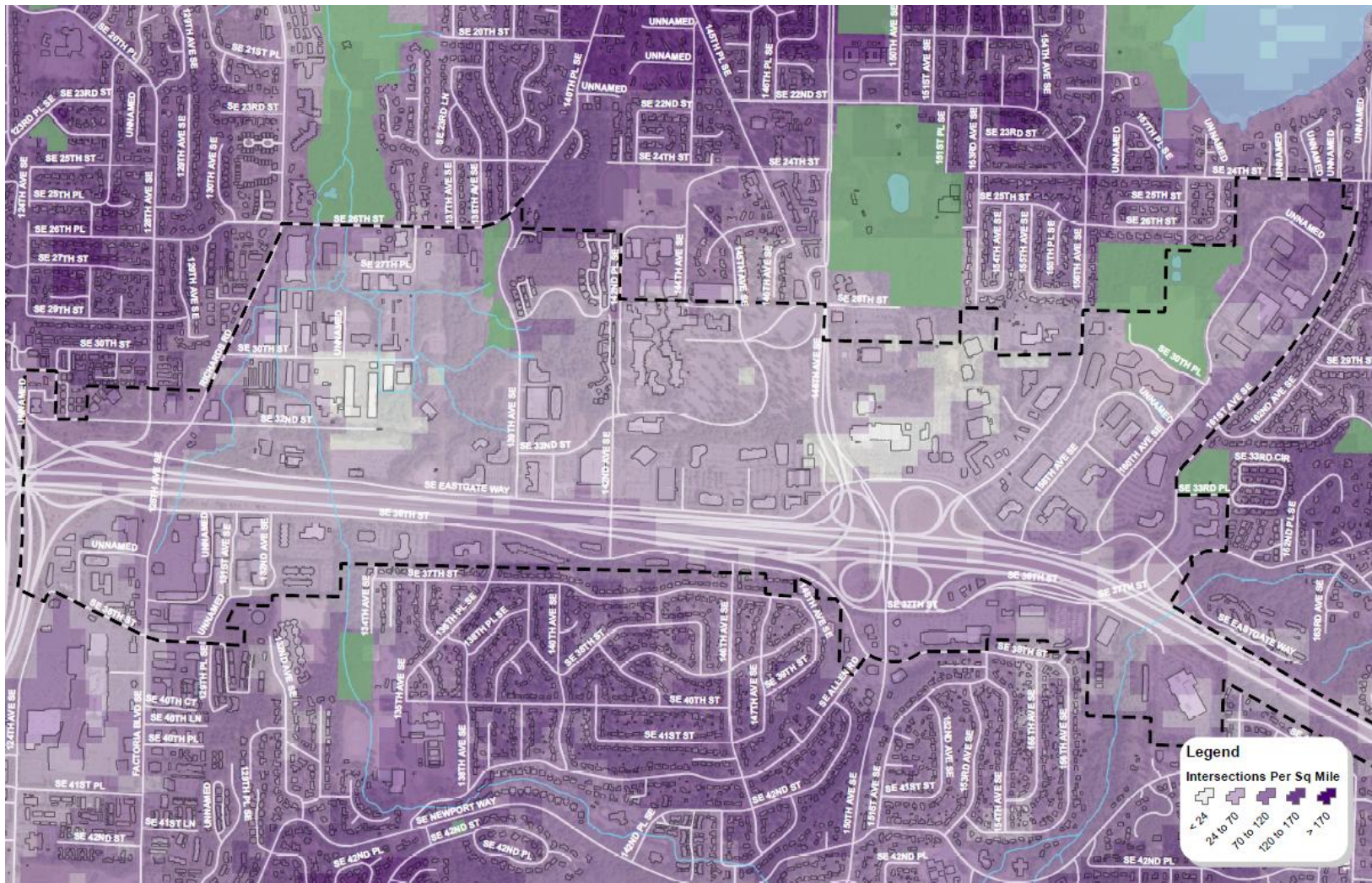


450 feet



Eastgate/I-90
Land Use & Transportation Project

Street Connectivity



LEED ND calls out 90 intersections per square mile as an important density threshold, with densities of up to 400 intersections per square mile for maximum credits under the ND scoring scheme.



Eastgate/I-90
Land Use & Transportation Project

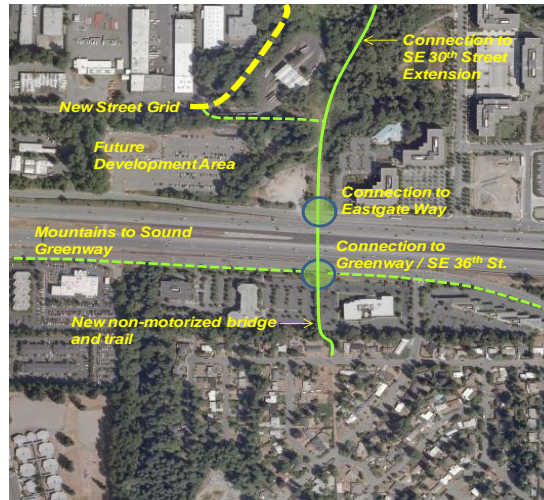
Intersection Density

New Street Grid East of Richards Road



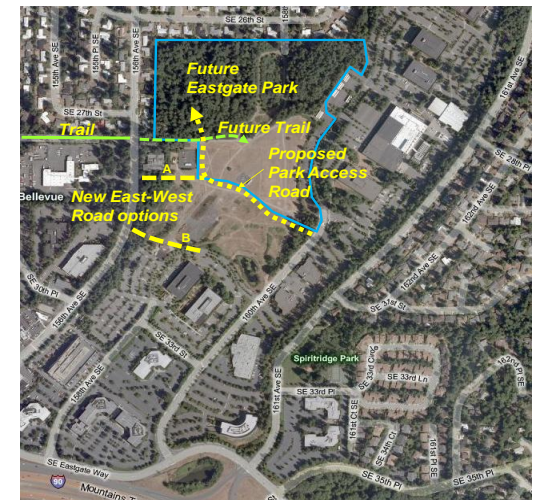
- **Concept:** All roads to be three lanes (includes center turn lane), bike lanes and sidewalks both sides.
- **Benefits:** SE 30th Street and SE 32nd Street currently dead-end. Businesses along these two roads must gain access to/from I-90 from Richards Road; results in congestion @ Richards Road/SE Eastgate Way (Intersection 105) for vehicle coming to/from the south.
- **Cost Estimate:** \$16.8M

New Non-motorized crossing over I-90



- **Concept:** Bridge, ramps/ stairwells to SE Eastgate Way and SE 36 St, trails to SE 30 St and SE 32 St.
- **Benefits:** Significant benefit to pedestrians and bicyclists by providing improved access to future growth areas, and an alternative facility away from existing congested roadways.
- **Cost Estimate:** \$16.1M.

New East-West Linkage to 156th Avenue SE



- **Concept:** A two lane road with bike lanes and sidewalks both sides.
- **Benefits:** A future east-west road to 156th Avenue SE would provide additional access points to distribute traffic to other roads away from Eastgate Way.
- **Cost Estimate:** Option A is \$2.4M, and Option B is \$3.8M.

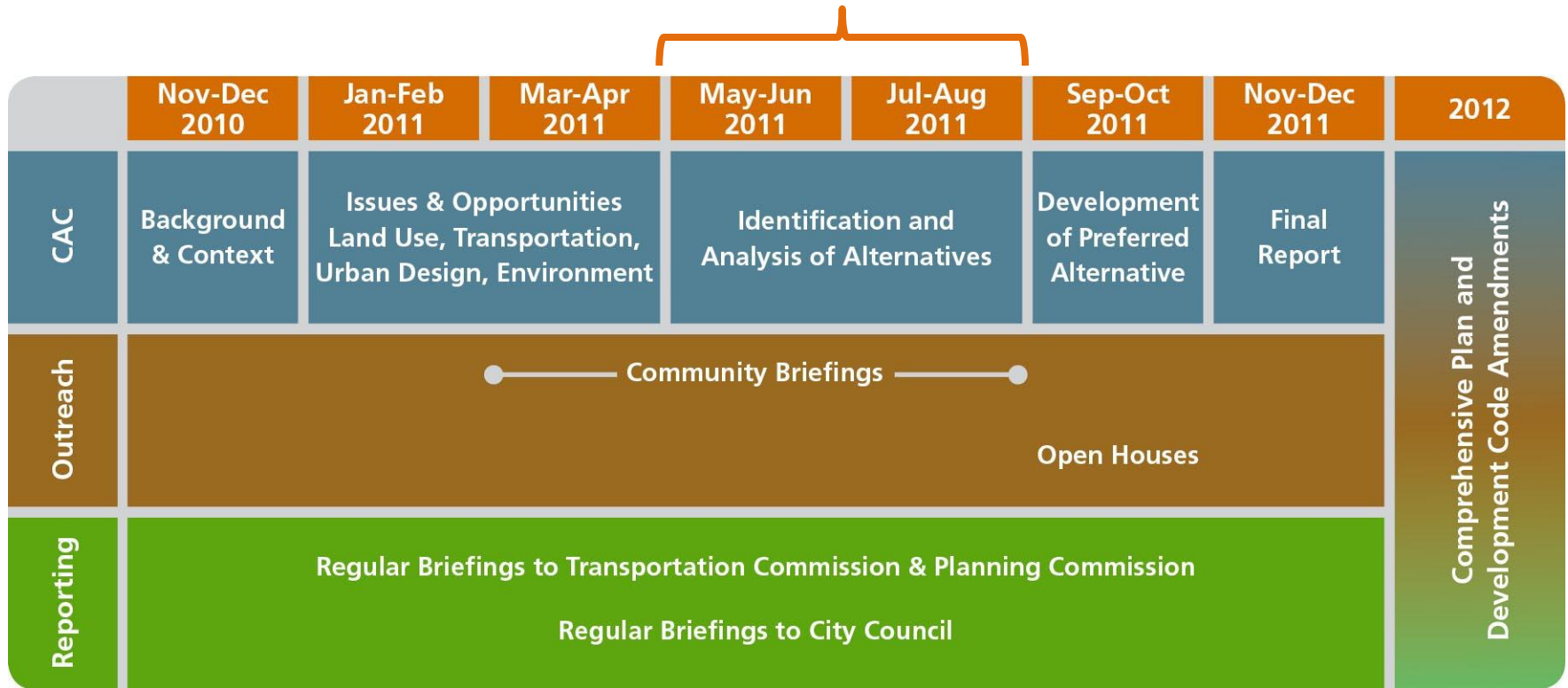
Questions or Comments on Pedestrian, Bicycle, & Connectivity Concepts?



Eastgate/I-90
Land Use & Transportation Project

CAC Insights

May - August



www.bellevuewa.gov/eastgate-corridor.htm



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Eastgate/I-90
Land Use & Transportation Project

Additional Information